



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

### Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

### About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>



3 3433 06640029 6













**U. S. Department of the Interior:**

**U. S. NATIONAL MUSEUM.**

**— Serial Number 40 —**

# **BULLETIN**

**OF THE**

**UNITED STATES NATIONAL MUSEUM.**

**No. 30.**

---

**PUBLISHED UNDER THE DIRECTION OF THE SMITHSONIAN INSTITUTION.**

---

**WASHINGTON:  
GOVERNMENT PRINTING OFFICE.**

**1885.**



## ADVERTISEMENT.

21.937-

This work (Bulletin No. 30) is the fortieth of a series of papers intended to illustrate the collections of natural history and ethnology belonging to the United States, and constituting the National Museum, of which the Smithsonian Institution was placed in charge by the act of Congress of August 10, 1846. It constitutes the third of the series of bibliographies illustrating the work of the Museum.

It has been prepared at the request of the Institution, and printed by authority of the honorable Secretary of the Interior.

The publications of the National Museum consist of two series—the Bulletins, of which this is No. 30, in continuous series, and the Proceedings, of which the eighth volume is now in press.

The volumes of Proceedings are printed signature by signature, each issue having its own date, and a small edition of each signature is distributed to libraries promptly after its publication.

From time to time the publications of the Museum which have been issued separately are combined together and issued as volumes of the Miscellaneous Collections. These are struck off from the stereotype plates from which the first edition was printed, and in this form are distributed by the Smithsonian Institution to libraries and scientific societies throughout the world. Volume 13 of these collections includes Bulletins 1 to 10, inclusive; volume 19, volumes 1 and 2 of the Proceedings; volume 22, volumes 3 and 4 of the Proceedings; and volume 23, Bulletins 11 to 15, inclusive.

Full lists of the publications of the Museum may be found in the current catalogues of the publications of the Smithsonian Institution.

SPENCER F. BAIRD,

*Secretary of the Smithsonian Institution.*

SMITHSONIAN INSTITUTION,

*Washington, December 1, 1885.*

**BIBLIOGRAPHIES OF AMERICAN NATURALISTS.**

---

**III.**

6033

**BIBLIOGRAPHY OF PUBLICATIONS**

**RELATING TO**

**THE COLLECTION OF FOSSIL INVERTEBRATES**

**IN THE**

**UNITED STATES NATIONAL MUSEUM,**

**INCLUDING**

**COMPLETE LISTS OF THE WRITINGS OF FIELDING B. MEEK,  
CHARLES A. WHITE, AND CHARLES D. WALCOTT.**

**BY**

**JOHN BELKNAP MARCOU.**

---

**. WASHINGTON:  
GOVERNMENT PRINTING OFFICE.**

**1885.**



## CONTENTS.

|                                                                                                             |                            |                           |              |
|-------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------|--------------|
| <b>Introductory note</b> .....                                                                              |                            | <b>Page.</b>              | <b>7</b>     |
| <b>Part I.—The published writings of Fielding Bradford Meek</b> .....                                       |                            |                           | <b>9</b>     |
| <b>Part II.—The published writings of Charles Abiathar White</b> .....                                      |                            |                           | <b>113</b>   |
| <b>Part III.—The published writings of Charles Doolittle Walcott</b> .....                                  |                            |                           | <b>183</b>   |
| <b>Part IV.—Publications based upon the Paleontological collections of the United States Government by—</b> |                            |                           |              |
|                                                                                                             | <b>Page.</b>               |                           | <b>Page.</b> |
| Jacob Whitman Bailey.....                                                                                   | 203                        | Alpheus Hyatt.....        | 239          |
| Timothy Abbot Conrad.....                                                                                   | 205                        | Jules Marcou.....         | 241          |
| James Dwight Dana.....                                                                                      | 223                        | John Strong Newberry..... | 245          |
| Christian Gottfried Ehrenberg.....                                                                          | 229                        | David Dale Owen.....      | 247          |
| James Hall.....                                                                                             | 231                        | James Schiel.....         | 253          |
| Angelo Heilprin.....                                                                                        | 237                        | Benjamin F. Shumard.....  | 255          |
|                                                                                                             | Robert Parr Whitfield..... | 259                       |              |
| <b>Supplement</b> .....                                                                                     |                            |                           | <b>273</b>   |
|                                                                                                             | <b>Page.</b>               |                           | <b>Page.</b> |
| J. W. Bailey.....                                                                                           | 273                        | Hiram A. Prout.....       | 273          |
| T. N. Nicollet.....                                                                                         | 273                        | Benjamin F. Shumard.....  | 274          |
| <b>Index of genera and species</b> .....                                                                    |                            |                           | <b>275</b>   |
| <b>General Index</b> .....                                                                                  |                            |                           | <b>327</b>   |





### INTRODUCTORY NOTE.

In preparing the following catalogues chronologic order has been followed under the different authors, and in Part IV the fifteen different authors are arranged, first, alphabetically and then chronologically under each author. Correctness of bibliographic form and detail has not been so much sought after as completeness and accuracy in the numerous references. A general alphabetic index of species will be found at the end of the volume. The compiler will be glad to have his attention called to any errors or omissions. Dr. White's bibliography is prepared from data furnished by himself. I am much indebted to Dr. White for his kind advice and help in the preparation of the work.



---

---

**PART I.**

**THE PUBLISHED WRITINGS OF FIELDING BRADFORD MEEK.**

---

---



## 1.—THE PUBLISHED WRITINGS OF FIELDING BRADFORD MEEK.

---

### BIOGRAPHIC SKETCH OF FIELDING BRADFORD MEEK.\*

On December 10, 1817, Fielding Bradford Meek was born in the city of Madison, Ind. His grandparents were Irish Presbyterians, who removed from Armagh County to America about 1768, and who finally settled in Hamilton County, Ohio. His father, together with his family, removed from there to Madison, where he was a lawyer of considerable eminence. The family, including those born in Madison, consisted of the parents, two sons and two daughters besides Fielding, all of whom died several years before him. The father died when the son who was to become so distinguished a paleontologist was only three years old, leaving the family in moderate circumstances. Mr. Meek's early youth was passed in Madison. His education was much impeded by the delicate condition of his health. Upon reaching manhood, by advice of his friends and against his own inclination, for he was of a studious and retiring disposition, he invested his small patrimony in mercantile business, first in his native place, and afterward in Owensborough, Ky. The result was financial failure and loss of all he possessed. After this, while laboring for his support and struggling with ill health and poverty, he continued his studies, general and special, for he began early to devote himself to natural history. His first public work was during the years 1848 and 1849, and was performed, as an assistant of Dr. D. D. Owen, upon the United States geological survey of Iowa, Wisconsin, and Minnesota.

Having closed this work, he returned to his home in Owensborough, but soon after, in the year 1852, went to Albany, N. Y., as assistant to Professor Hall, in the paleontologic work of that State. He remained there until 1858, serving three summers. Two of these summers were spent on the geologic survey of Missouri; the other, that of 1853, was employed in exploring the Bad Lands of Nebraska, together with Dr. F. V. Hayden, both being commissioned by Professor Hall for that work. Three

---

\* This sketch is compiled from data taken down at Mr. Meek's dictation by a friend shortly before his death.

years after this exploration, he prepared for publication, in conjunction with Professor Hall, an important memoir on cretaceous fossils from Nebraska. In 1855, Mr. Meek left Albany and took up his residence in Washington, where he continued to live until his death. His home, and the place of his scientific work, except when in the field, was at the Smithsonian Institution, and it was within its walls that the greatest part of his scientific work was accomplished. The association which he formed with Dr. Hayden in 1853 was tacitly continued until Mr. Meek's death. When Dr. Hayden commenced his explorations in the Western Territories, and afterwards organized the Geological Survey of the Rocky Mountain region, Mr. Meek was entrusted with all the invertebrate paleontology, much of which appeared under their joint names. It was the custom of Mr. Meek to publish preliminary descriptions of his new species, and afterward elaborate and illustrate the subjects for final publication. Thoroughness, scrupulous exactness, and nice powers of discrimination are manifested in all his labors; and with such merits his works will shed luster upon his name as long as paleontology is studied. No one in America has done more than he to systematize and advance the science to which he devoted his life. His personal character cannot be too highly eulogized, for it was without a blemish. He was a genial, sincere, pure-minded, honorable man. Gentleness and candor were apparent in every expression of his face, and in every word he uttered; but he was self-reliant and ready at all times to defend what he believed to be right, and with his keen sense of justice, he was seldom mistaken as to what was right. He was never in vigorous health and often ill; but never complaining, always hopeful, always cheerful, always at the work he loved so well, always helpful of others. His hearing began to fail in early manhood, and the affliction increased until he became entirely deaf several years before he died. Even when cut off from conversation with his fellow-men his cheerfulness did not forsake him; but he seemed to derive great pleasure from written communication with his friends. He was never married, and leaves no near relatives; but all with whom he was ever brought in contact will remember him with pleasure, while to those who were permitted to enjoy scientific intercourse or correspondence with him during his life, his memory will be especially dear. He died at Washington, D. C., on the 21st of December, 1876, having only a few days before completed his 59th year. He had been in ill health for several years past, and indeed almost all his life, for his malady was inherited *phthisis pulmonalis*. It had been his custom for several years to spend the winter in Florida, and the summer months in the Alleghany Mountains. He had made preparations to leave Washington for Florida early in December, but was taken with hemorrhage of the lungs on the day before the one set for his departure. He never rallied from this attack, but gradually sank to a peaceful and quiet death.

1.

**MEEK, F. B.** Mr. Meek's report on Moniteau County. <The first and second annual reports of the geological survey of Missouri, by G. C. Swallow, State geologist. Part II. pp. 96-117. Jefferson City, 1855.

CONTENTS OF THE REPORT.

|                                                                                                                                             | Page. |
|---------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Quaternary deposits .....                                                                                                                   | 96    |
| Carboniferous system.—Encrinital limestone .....                                                                                            | 98    |
| Chemung group .....                                                                                                                         | 101   |
| Devonian system.—Upper Helderberg.—Onondaga limestone .....                                                                                 | 103   |
| Lower Silurian strata:                                                                                                                      |       |
| Saccharoidal sandstone .....                                                                                                                | 105   |
| Second magnesian limestone .....                                                                                                            | 106   |
| Economical geology:                                                                                                                         |       |
| Soil .....                                                                                                                                  | 109   |
| Building stones .....                                                                                                                       | 110   |
| Fire-stones, limestones for lime .....                                                                                                      | 110   |
| Sand for making mortar, hydraulic limestone, millstones, materials for the construction of roads, clays for the manufacture of bricks ..... | 111   |
| Coal .....                                                                                                                                  | 112   |
| Iron ore .....                                                                                                                              | 115   |
| Lead .....                                                                                                                                  | 115   |
| High-Point Mine .....                                                                                                                       | 117   |

Mr. Meek also drew the figures illustrating the paleontological report in this volume. A geological map of the county is also given.

2.

**HALL, JAMES, and MEEK, F. B.** Descriptions of new species of fossils from the Cretaceous formations of Nebraska; with observations upon *Baculites ovatus* and *B. compressus*, and the progressive development of the septa in *Baculites*, *Ammonites*, and *Scaphites*. <Mem. Am. Acad. Arts and Sci., vol. v, new ser., pp. 379-411, 8 plates. 1856. Cambridge, 1856.

The fossils described in this paper were collected in 1853 by F. B. Meek and F. V. Hayden. The paper was communicated June 27, 1854, but was not published till 1856.

|                                                                                         | Page.   |
|-----------------------------------------------------------------------------------------|---------|
| <i>Callianassa danai</i> , n. s., H. & M., 1856, pl. i, fig. 1 a, b .....               | 379-380 |
| <i>Lingula subpatulata</i> , n. s., H. & M., 1856, pl. i, figs. 2 a, b .....            | 380     |
| <i>Caprinella coralioidea</i> , n. s., H. & M., 1856, pl. ii, figs. 3 a-f .....         | 380-381 |
| <i>Pecten rigida</i> , n. s., H. & M., 1856, pl. ii, figs. 4 a-c .....                  | 381     |
| <i>Aricula haydeni</i> , n. s., H. & M., 1856, pl. i, figs. 5 a, b .....                | 382     |
| <i>Lacina subundata</i> , n. s., H. & M., 1856, pl. i, figs. 6 a, b .....               | 382     |
| <i>Cytherea orbiculata</i> , n. s., H. & M., 1856, pl. i, fig. 7 .....                  | 382-383 |
| <i>Cytherea tenuis</i> , n. s., H. & M., 1856, pl. i, figs. 8 a-c .....                 | 383     |
| <i>Crassatella evansii</i> , n. s., H. & M., 1856, pl. i, figs. 9 a-e .....             | 383-384 |
| <i>Pectunculus siouxensis</i> , n. s., H. & M., 1856, pl. i, fig. 12 .....              | 384     |
| <i>Nucula subnasuta</i> , n. s., H. & M., 1856, pl. i, figs. 10 a-c .....               | 384-385 |
| <i>Nucula ventricosa</i> , n. s., H. & M., 1856, pl. i, fig. 11 a, b .....              | 385     |
| <i>Capulus occidentalis</i> , n. s., H. & M., 1856, pl. i, fig. 13 a-d .....            | 385-386 |
| <i>Inoceramus sublaevis</i> , n. s., H. & M., 1856, pl. ii, fig. 1 a, b .....           | 386     |
| <i>Inoceramus convexus</i> , n. s., H. & M., 1856, pl. ii, fig. 2 a, b .....            | 386-387 |
| <i>Inoceramus tenuilunatus</i> , n. s., H. & M., 1856, pl. ii, fig. 3 a, b .....        | 387     |
| <i>Inoceramus conradi</i> , n. s., H. & M., 1856, pl. ii, fig. 5 a, b .....             | 387-388 |
| <i>Inoceramus fragilis</i> , n. s., H. & M., 1856, pl. ii, figs. 6 a, b .....           | 388     |
| <i>Natica obliquata</i> , n. s., H. & M., 1856, pl. iii, figs. 1 a, b .....             | 389     |
| <i>Natica concinna</i> , n. s., H. & M., 1856, pl. iii, figs. 2 a-d .....               | 389     |
| <i>Natica paludinaeformis</i> , n. s., H. & M., 1856, pl. iii, fig. 3 a-c .....         | 389-390 |
| <i>Acteon concinnus</i> , n. s., H. & M., 1856, pl. iii, figs. 4 a-d .....              | 390     |
| <i>Buccinum? vinculum</i> , n. s., H. & M., 1856, pl. iii, figs. 5 a-b .....            | 390-391 |
| <i>Fusus shumardii</i> , n. s., H. & M., 1856, pl. iii, figs. 6 a-c .....               | 391     |
| <i>Fusus constrictus</i> , n. s., H. & M., 1856, pl. iii, figs. 7 a-d .....             | 391-392 |
| <i>Fusus? tenuilineata</i> , n. s., H. & M., 1856, pl. iii, figs. 8 a-c and 9 a-c ..... | 392     |
| <i>Rostellaria fusiformis</i> , n. s., H. & M., 1856, pl. iii, fig. 10 a, b .....       | 393     |
| <i>Dentalium gracilis</i> , n. s., H. & M., 1856, pl. iii, fig. 11 a-c .....            | 393     |



|                                                                                                                                   | Page.   |
|-----------------------------------------------------------------------------------------------------------------------------------|---------|
| <i>Helix leidyi</i> n. s., H. & M., 1856, pl. iii, fig. 12 a, b                                                                   | 394     |
| <i>Ammonites complexus</i> , n. s., H. & M., 1856, pl. iv, fig. 1 a-f                                                             | 394-395 |
| <i>Ammonites procarinatus</i> , n. s., H. & M., 1856, pl. iv, fig. 2 a-c                                                          | 395     |
| <i>Hamites mortoni</i> , n. s., H. & M., 1856, pl. iv, figs. 3 a-c                                                                | 395-397 |
| <i>Ancylloceras nicolleti</i> , n. s., H. & M., 1856, pl. iv, fig. 4                                                              | 397-398 |
| <i>Baculites oratus</i> and <i>B. compressus</i> , Say                                                                            | 398-399 |
| <i>Baculites ovatus</i> , Say, pl. v, fig. 1, a-c; pl. vi, figs. 1-7                                                              | 399-400 |
| <i>Baculites compressus</i> , Say, pl. v, figs. 2 a-b; pl. vi, figs. 8-9                                                          | 400-472 |
| <i>Baculites grandis</i> , n. s., H. & M., 1856, pl. vii, fig. 1, 2; pl. viii, figs. 1, 2; pl. vi, fig. 10                        | 402-403 |
| The same paper contains—                                                                                                          |         |
| Section of the members of the Cretaceous formation as observed on the Missouri River, and thence westward to the Mauvaises Terres | 405     |
| List of fossils heretofore identified and described from the Cretaceous formation of Nebraska                                     | 405     |
| List of species common to the Cretaceous formations of Nebraska and New Jersey                                                    | 406     |
| List of the new species of fossils described in the preceding paper                                                               | 406     |
| In the additions and corrections                                                                                                  | 411     |
| <i>Fusus constrictus</i> is referred to the genus <i>Buccinum</i> .                                                               |         |
| <i>Hamites mortoni</i> is regarded as belonging to the genus <i>Ancylloceras</i> as defined by Pictet.                            |         |

## 3.

MEEK, F. B., and HAYDEN, F. V. Descriptions of new species of Gasteropoda, from the Cretaceous formation of Nebraska Territory. <Proc. Acad. Nat. Sci. Phila., vol. viii, pp. 63-69. 1856. Philadelphia, 1857.

|                                                       | Page. |
|-------------------------------------------------------|-------|
| <i>Scalaria cerethiformis</i> , n. s., M. & H., 1856  | 63    |
| <i>Acteon subellipticus</i> , n. s., M. & H., 1856    | 63-64 |
| <i>Avalana subglobosa</i> , n. s., M. & H., 1856      | 64    |
| <i>Natica ambigua</i> , n. s., M. & H., 1856          | 64    |
| <i>Natica occidentalis</i> , n. s., M. & H., 1856     | 64    |
| <i>Natica moreauensis</i> , n. s., M. & H., 1856      | 64    |
| <i>Turbo nebrascensis</i> , n. s., M. & H., 1856      | 64    |
| <i>Turbo tenuilineatus</i> , n. s., M. & H., 1856     | 64-65 |
| <i>Rostellaria biangulata</i> , n. s., M. & H., 1856  | 65    |
| <i>Fusus dakotaensis</i> , n. s., M. & H., 1856       | 65    |
| <i>Fusus galpinianus</i> , n. s., M. & H., 1856       | 65    |
| <i>Fusus contortus</i> , n. s., M. & H., 1856         | 65    |
| <i>Fusus culbertsoni</i> , n. s., M. & H., 1856       | 66    |
| <i>Fusus flexuocostatus</i> , n. s., M. & H., 1856    | 66    |
| <i>Fusus neoberryi</i> , n. s., M. & H., 1856         | 66    |
| <i>Pyrula bairdi</i> , n. s., M. & H., 1856           | 66    |
| <i>Fasciolaria cretacea</i> , n. s., M. & H., 1856    | 66-67 |
| <i>Fasciolaria buccinoides</i> , n. s., M. & H., 1856 | 67    |
| <i>Buccinum nebrascensis</i> , n. s., M. & H., 1856   | 67    |
| <i>Capulus fragilis</i> , n. s., M. & H., 1856        | 68    |
| <i>Helcion</i> , Montfort                             | 68    |
| <i>Helcion sexsulcatus</i> , n. s., M. & H., 1856     | 68    |
| <i>Helcion patelliformis</i> , n. s., M. & H., 1856   | 68    |
| <i>Helcion alveolus</i> , n. s., M. & H., 1856        | 68    |
| <i>Helcion subovatus</i> , n. s., M. & H., 1856       | 68    |
| <i>Helcion carinatus</i> , n. s., M. & H., 1856       | 68-69 |
| <i>Dentalium fragilis</i> , n. s., M. & H., 1856      | 69    |
| <i>Bulla volvaria</i> , n. s., M. & H., 1856          | 69    |
| <i>Bulla minor</i> , n. s., M. & H., 1856             | 69    |
| <i>Bulla occidentalis</i> , n. s., M. & H., 1856      | 69    |

## 4.

MEEK, F. B., and HAYDEN, F. V. Descriptions of new species of Gasteropoda and Cephalopoda, from the Cretaceous formations of Nebraska Territory. <Proc. Acad. Nat. Sci. Phila., vol. viii, pp. 70-72. 1856. Philadelphia, 1857.

|                                                      | Page. |
|------------------------------------------------------|-------|
| <i>Turritella conteza</i> , n. s., M. & H., 1857     | 70    |
| <i>Turritella morcauensis</i> , n. s., M. & H., 1857 | 70    |

|                                                                 | Page. |
|-----------------------------------------------------------------|-------|
| <i>Belemnitella ? bulbosa</i> , n. s., M. & H., 1857 .....      | 70    |
| <i>Ammonites halli</i> , n. s., M. & H., 1857 .....             | 70-71 |
| <i>Ancylloceras ? nebrascensis</i> , n. s., M. & H., 1857 ..... | 71    |
| <i>Ancylloceras ? cheyennensis</i> , n. s., M. & H., 1857 ..... | 71-72 |

5,

MEEK, F. B., and HAYDEN, F. V. Descriptions of twenty-eight new species of Acephala and one Gasteropod, from the Cretaceous formations of Nebraska Territory.  
<Proc. Acad. Nat. Sci. Phila., vol. viii, pp. 81-87. 1856. Philadelphia, 1857.

|                                                              | Page. |
|--------------------------------------------------------------|-------|
| <i>Pholadomya undata</i> , n. s., M. & H., 1856 .....        | 81    |
| <i>Goniomya americana</i> , n. s., M. & H., 1856 .....       | 81-82 |
| <i>Solen subplicatus</i> , n. s., M. & H., 1856 .....        | 82    |
| <i>Tellina gracilis</i> , n. s., M. & H., 1856 .....         | 82    |
| <i>Tellina equilateralis</i> , n. s., M. & H., 1856 .....    | 82    |
| <i>Tellina ? cheyennensis</i> , n. s., M. & H., 1856 .....   | 82    |
| <i>Tellina scitula</i> , n. s., M. & H., 1856 .....          | 82    |
| <i>Tellina subelliptica</i> , n. s., M. & H., 1856 .....     | 83    |
| <i>Tellina prouti</i> , n. s., M. & H., 1856 .....           | 83    |
| <i>Cytherea deweyi</i> , n. s., M. & H., 1856 .....          | 83    |
| <i>Cytherea nebrascensis</i> , n. s., M. & H., 1856 .....    | 83    |
| <i>Corbula ventricosa</i> , n. s., M. & H., 1856 .....       | 83    |
| <i>Corbula moreauensis</i> , n. s., M. & H., 1856 .....      | 83-84 |
| <i>Corbula ? gregaria</i> , n. s., M. & H., 1856 .....       | 84    |
| <i>Astarte gregaria</i> , n. s., M. & H., 1856 .....         | 84    |
| <i>Nucula scitula</i> , n. s., M. & H., 1856 .....           | 84    |
| <i>Nucula evansi</i> , n. s., M. & H., 1856 .....            | 84    |
| <i>Nucula equilateralis</i> , n. s., M. & H., 1856 .....     | 84-85 |
| <i>Nucula subplana</i> , n. s., M. & H., 1856 .....          | 85    |
| <i>Nucula cancellata</i> , n. s., M. & H., 1856 .....        | 85    |
| <i>Nucula planomarginata</i> , n. s., M. & H., 1856 .....    | 85    |
| <i>Pectunculina parvula</i> , n. s., M. & H., 1856 .....     | 86    |
| <i>Area (Cucullæa) cordata</i> , n. s., M. & H., 1856 .....  | 86    |
| <i>Area (Cucullæa) shumardi</i> , n. s., M. & H., 1856 ..... | 86    |
| <i>Mytilus attenuatus</i> , n. s., M. & H., 1856 .....       | 86    |
| <i>Aricula ? fibrosa</i> , n. s., M. & H., 1856 .....        | 86-87 |
| <i>Inoceramus ventricosus</i> , n. s., M. & H., 1856 .....   | 87    |
| <i>Pecten nebrascensis</i> , n. s., M. & H., 1856 .....      | 87    |
| <i>Natica ruberassa</i> , n. s., M. & H., 1856 .....         | 87    |

6.

MEEK, F. B., and HAYDEN, F. V. Descriptions of new species of Acephala and Gasteropoda, from the Tertiary formations of Nebraska Territory; with some general remarks on the geology of the country about the sources of the Missouri River.  
<Proc. Acad. Nat. Sci. Phila., vol. viii, pp. 111-126. 1856. Philadelphia, 1857.

|                                                                    | Page.   |
|--------------------------------------------------------------------|---------|
| Formations immediately beneath the Tertiary in this district ..... | 113     |
| Formations at the base of the Cretaceous of this district .....    | 114     |
| <i>Cyclas formosa</i> , n. s., M. & H., 1856 .....                 | 115     |
| <i>Cyclas fragilis</i> , n. s., M. & H., 1856 .....                | 115     |
| <i>Cyclas subellipticus</i> , n. s., M. & H., 1856 .....           | 115     |
| <i>Cyrena moreauensis</i> , n. s., M. & H., 1856 .....             | 115-116 |
| <i>Cyrena intermedia</i> , n. s., M. & H., 1856 .....              | 116     |
| <i>Cyrena occidentalis</i> , n. s., M. & H., 1856 .....            | 116     |
| <i>Corbula subtrigonalis</i> , n. s., M. & H., 1856 .....          | 116     |
| <i>Corbula perundata</i> , n. s., M. & H., 1856 .....              | 116     |
| <i>Corbula mactriformis</i> , n. s., M. & H., 1856 .....           | 117     |
| <i>Unio prius</i> , n. s., M. & H., 1856 .....                     | 117     |
| <i>Bulimus ? tereus</i> , n. s., M. & H., 1856 .....               | 117-118 |
| <i>Bulimus ? cermiculus</i> , n. s., M. & H., 1856 .....           | 118     |

|                                                               | P.  |
|---------------------------------------------------------------|-----|
| <i>Bulinus linneiformis</i> , n. s., M. & H., 1856 .....      |     |
| <i>Bulinus nebrascensis</i> , n. s., M. & H., 1856 .....      |     |
| <i>Puzos helicoides</i> , n. s., M. & H., 1856 .....          | 118 |
| <i>Limnæa tenuicosta</i> , n. s., M. & H., 1856 .....         |     |
| <i>Physa longuiscula</i> , n. s., M. & H., 1856 .....         |     |
| <i>Physa rhomboidea</i> , n. s., M. & H., 1856 .....          |     |
| <i>Physa nebrascensis</i> , n. s., M. & H., 1856 .....        | 119 |
| <i>Physa subelongata</i> , n. s., M. & H., 1856 .....         |     |
| <i>Planorbis subumbilicatus</i> , n. s., M. & H., 1856 .....  |     |
| <i>Planorbis concoloratus</i> , n. s., M. & H., 1856 .....    |     |
| <i>Velletia (Ancylus) minuta</i> , n. s., M. & H., 1856 ..... |     |
| <i>Paludina multilineata</i> , n. s., M. & H., 1856 .....     | 120 |
| <i>Paludina retula</i> , n. s., M. & H., 1856 .....           |     |
| <i>Paludina leai</i> , n. s., M. & H., 1856 .....             | 121 |
| <i>Paludina retusa</i> , n. s., M. & H., 1856 .....           |     |
| <i>Paludina conradi</i> , n. s., M. & H., 1856 .....          |     |
| <i>Paludina peculiaris</i> , n. s., M. & H., 1856 .....       |     |
| <i>Paludina trochiformis</i> , n. s., M. & H., 1856 .....     | 122 |
| <i>Paludina leidyi</i> , n. s., M. & H., 1856 .....           |     |
| <i>Valvata parvula</i> , n. s., M. & H., 1856 .....           |     |
| <i>Melania minutula</i> , n. s., M. & H., 1856 .....          | 123 |
| <i>Melania anthonyi</i> , n. s., M. & H., 1856 .....          |     |
| <i>Melania multistriata</i> , n. s., M. & H., 1856 .....      |     |
| <i>Melania nebrascensis</i> , n. s., M. & H., 1856 .....      | 124 |
| <i>Melania conessa</i> , n. s., M. & H., 1856 .....           |     |
| <i>Cerithium nebrascensis</i> , n. s., M. & H., 1856 .....    |     |

On page 126 *Pyrula bairdi* is changed to *Busyon* (Bolten), and called *B. bairdi*.

## 7.

MEEK, F. B., and HAYDEN, F. V. Descriptions of new fossil species of Mollusca collected by Dr. F. V. Hayden in Nebraska Territory, together with a complete catalogue of all the remains of Invertebrata hitherto described and identified from the Cretaceous and Tertiary formations of that region. <Proc. Acad. Nat. Sci. Phila., vol. viii, pp. 265-286. 1856. Philadelphia, 1857.

|                                                                                                                                                            | P.  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Vertical section of the geological formation of Nebraska Territory, so far as determined .....                                                             |     |
| <i>Natica tuomyana</i> , n. s., M. & H., 1856 .....                                                                                                        |     |
| <i>Hulla subcylindrica</i> , n. s., M. & H., 1856 .....                                                                                                    |     |
| <i>Panopæa occidentalis</i> , n. s., M. & H., 1856 .....                                                                                                   |     |
| <i>Mactra formosa</i> , n. s., M. & H., 1856 .....                                                                                                         |     |
| <i>Mactra warrenana</i> , n. s., M. & H., 1856 .....                                                                                                       |     |
| <i>Mactra alba</i> , n. s., M. & H., 1856 .....                                                                                                            | 271 |
| <i>Tellina subtruncata</i> , n. s., M. & H., 1856 .....                                                                                                    |     |
| <i>Venus / circularis</i> , n. s., M. & H., 1856 .....                                                                                                     |     |
| <i>Cytherea pellucida</i> , n. s., M. & H., 1856 .....                                                                                                     | 272 |
| <i>Cytherea oregonana</i> , n. s., M. & H., 1856 .....                                                                                                     |     |
| <i>Lucina occidentalis</i> , n. s., M. & H., 1856 .....                                                                                                    | 273 |
| <i>Hastangia americana</i> , n. s., M. & H., 1856 .....                                                                                                    |     |
| <i>Cardium speciosum</i> , n. s., M. & H., 1856 .....                                                                                                      | 274 |
| <i>Nucula obsoletostriata</i> , n. s., M. & H., 1856 .....                                                                                                 |     |
| <i>Cucullæa exigua</i> , n. s., M. & H., 1856 .....                                                                                                        | 275 |
| <i>Mytilus subarcuatus</i> , n. s., M. & H., 1856 .....                                                                                                    |     |
| <i>Gervillia subtruncata</i> , n. s., M. & H., 1856 .....                                                                                                  |     |
| <i>Inoceramus portensis</i> , n. s., M. & H., 1856 .....                                                                                                   | 276 |
| <i>Inoceramus incurvus</i> , n. s., M. & H., 1856 .....                                                                                                    |     |
| <i>Orthis pulchra</i> , n. s., M. & H., 1856 .....                                                                                                         |     |
| Catalogue of all the Invertebrate fossil remains hitherto described and identified from the Tertiary and Cretaceous formations of Nebraska Territory ..... |     |
| Tertiary species .....                                                                                                                                     |     |
| Cretaceous species .....                                                                                                                                   |     |

8.

MEEK, F. B. Description of new organic remains from the Cretaceous rocks of Vancouver's Island. <Trans. Albany Inst., vol. iv, pp. 37-49. 1857. Albany, 1858-1864.

The fossils here described were collected by Dr. J. S. Newberry, geologist of Lieutenant Williamson's North California and Oregon Exploring Expedition. The author describes twelve new species.

|                                                                   | Page. |
|-------------------------------------------------------------------|-------|
| <i>Nucula traskana</i> , n. s., Meek, 1857 .....                  | 39    |
| <i>Area (Cucullæa) equilateralis</i> , n. s., Meek, 1857 .....    | 39-40 |
| <i>Area vancouverensis</i> , n. s., Meek, 1857 .....              | 40    |
| <i>Cardium scitulum</i> , n. s., Meek, 1857 .....                 | 40-41 |
| <i>Ph[oladomya] (Goniomya) borealis</i> , n. s., Meek, 1857 ..... | 41-42 |
| <i>Ph[oladomya] subelongata</i> , n. s., Meek, 1857 .....         | 42    |
| <i>Trigonia evansana</i> , n. s., Meek, 1857 .....                | 43    |
| <i>Thracia? occidentalis</i> , n. s., Meek, 1857 .....            | 43-44 |
| <i>Thracia? subtruncata</i> , n. s., Meek, 1857 .....             | 44    |
| <i>Dentalium nanaimensis</i> , n. s., Meek, 1857 .....            | 44-45 |
| <i>Ammonites (Scaphites?) ramosus</i> , n. s., Meek, 1857 .....   | 45-47 |
| <i>Ammonites newberryanus</i> , n. s., Meek, 1857 .....           | 47-48 |
| <i>Baculites ovatus?</i> (Soy) .....                              | 48-49 |

Mr. Meek gives the date of these species as 1857 when he republished them with illustrations in the Bull. U. S. Geol. and Geogr. Surv. Terr., vol. ii, No. 4. Washington, 1876.

9.

MEEK, F. B., and HAYDEN, F. V. Descriptions of new species and genera of fossils collected by Dr. F. V. Hayden in Nebraska Territory, under the direction of Lieut. G. K. Warren, U. S. Topographical Engineers; with some remarks on the Tertiary and Cretaceous formations of the Northwest and the parallelism of the latter with those of other portions of the United States and Territories. <Proc. Acad. Nat. Sci. Phila., 1st series, vol. ix, pp. 117-148. 1857. Philadelphia, 1858.

Genera *Pseudobuccinum*, *Corbulamella*.

|                                                                                                                       | Page.   |
|-----------------------------------------------------------------------------------------------------------------------|---------|
| Gives a brief account of the results of previous explorations .....                                                   | 117-121 |
| Section of Tertiary beds thirteen miles above Fort Clark .....                                                        | 122     |
| Section of fresh-water and estuary deposits near the mouth of Judith River .....                                      | 124     |
| Section of the older deposits at the mouth of Judith River, in the descending order ...                               | 125     |
| Alabama section, from facts communicated by Prof. A. Winchell .....                                                   | 126     |
| New Jersey section, compiled from the reports of that State .....                                                     | 127     |
| Vertical section of the geological formations of Nebraska Territory, so far as determined .....                       | 128     |
| Sections of the rocks in Northeastern Kansas (above the Coal Measures). By Major F. Hawn, U. S. deputy surveyor ..... | 130     |
| Section of the formations at Pyramid Mountain, New Mexico [by Jules Marcou] .....                                     | 132     |
| Conclusions .....                                                                                                     | 133     |
| <i>Ptychoceras mortoni</i> , n. s., M. & H., 1857 .....                                                               | 134     |
| <i>Serpula? tenuicarinatus</i> , n. s., M. & H., 1857 .....                                                           | 134     |
| <i>Vitrina obliqua</i> , n. s., M. & H., 1857 .....                                                                   | 134     |
| <i>Helix occidentalis</i> , n. s., M. & H., 1857 .....                                                                | 135     |
| <i>Helix vitrinoides</i> , n. s., M. & H., 1857 .....                                                                 | 135     |
| <i>Planorbis tenuivolvis</i> , n. s., M. & H., 1857 .....                                                             | 135     |
| <i>Planorbis amplexus</i> , n. s., M. & H., 1857 .....                                                                | 135-136 |
| <i>Planorbis fragilis</i> , n. s., M. & H., 1857 .....                                                                | 136     |
| <i>Melania subtoruosa</i> , n. s., M. & H., 1857 .....                                                                | 136     |
| <i>Melania omitta</i> , n. s., M. & H., 1857 .....                                                                    | 136     |
| <i>Melania sublaevis</i> , n. s., M. & H., 1857 .....                                                                 | 136-137 |
| <i>Melania invenusta</i> , n. s., M. & H., 1857 .....                                                                 | 137     |
| <i>Melania warrenana</i> , n. s., M. & H., 1857 .....                                                                 | 137     |
| <i>Melania tenuicarinata</i> , n. s., M. & H., 1857 .....                                                             | 137-138 |
| <i>Melania convexa</i> , M. & H. ....                                                                                 | 138     |
| <i>Fusus vaughani</i> , n. s., M. & H., 1857 .....                                                                    | 138-139 |
| <i>Fusus subturritus</i> , n. s., M. & H., 1857 .....                                                                 | 139     |

|                                                                                      | Pa  |
|--------------------------------------------------------------------------------------|-----|
| <i>Purua intertextus</i> , n. s., M. & H., 1857 .....                                |     |
| <i>Purua</i> ( <i>Pleurotoma</i> ?) <i>scarboroughi</i> , n. s., M. & H., 1857 ..... | 126 |
| <i>Pseudobuccinum</i> , n. g., M. & H., 1857 .....                                   |     |
| <i>Pseudobuccinum nebrascensis</i> , M. & H. ....                                    | 146 |
| <i>Xylophaga elegantula</i> , n. s., M. H., 1857 .....                               |     |
| <i>Xylophaga stimpsoni</i> , n. s., M. & H., 1857 .....                              | 141 |
| <i>Pholadomya subventricosa</i> , n. s., M. & H., 1857 .....                         |     |
| <i>Solen</i> ? <i>dakotensis</i> , n. s., M. & H., 1857 .....                        |     |
| <i>Corbulamella</i> , n. g., M. & H., 1857 .....                                     | 143 |
| <i>Corbulamella gregarea</i> , M. & H. ....                                          |     |
| <i>Cyprina arenaria</i> , n. s., M. & H., 1857 .....                                 |     |
| <i>Cyprina cordata</i> , n. s., M. & H., 1857 .....                                  |     |
| <i>Cyprina compressa</i> , n. s., M. & H., 1857 .....                                |     |
| <i>Cyprina subtumida</i> , n. s., M. & H., 1857 .....                                |     |
| <i>Cyprina ovata</i> , n. s., M. & H., 1857 .....                                    |     |
| <i>Unio danai</i> , n. s., M. & H., 1857 .....                                       |     |
| <i>Unio deweyanus</i> , n. s., M. & H., 1857 .....                                   | 145 |
| <i>Unio subpatulata</i> , n. s., M. & H., 1857 .....                                 |     |
| <i>Pectunculus subimbricatus</i> , n. s., M. & H., 1857 .....                        |     |
| <i>Ostrea glabra</i> , n. s., M. & H., 1857 .....                                    | 146 |
| <i>Ostrea translucida</i> , n. s., M. & H., 1857 .....                               |     |
| <i>Hemiaser</i> ? <i>humphreysanus</i> , n. s., M. & H., 1857 .....                  | 147 |

## 10.

K, F. B., and HAYDEN, F. V. Fossils of Nebraska. Letter from F. B. M and F. V. Hayden to G. K. Warren, Lieut. Topog. Eng., dated Washing February 8, 1858; printed in the National Intelligencer of March 16. < Journ. Sci., vol. xxv, 2d ser., pp. 439-442. New Haven, 1858.

This article is mainly geologic, only the genera, which characterise the formations under cussion, being enumerated.

## 11.

K, F. B., and HAYDEN, F. V. Descriptions of new organic remains collected Nebraska Territory, in the year 1857, by Dr. F. V. Hayden, geologist to the exploring expedition under the command of Lieut. G. K. Warren, Top. Eng., U Army; together with some remarks on the geology of the Black Hills and porti of the surrounding country. <Proc. Acad. Nat. Sci. Phila., vol. x, pp. 41-59. 1 Philadelphia, 1859.

Jurassic fossils. Afterward republished and illustrated, in 1865, in *Paleontology of Upper Missouri*, Smithsonian Contributions to Knowledge, 172.

|                                                                                                    | Pa |
|----------------------------------------------------------------------------------------------------|----|
| General section of the geological formations seen in and near the Black Hills (descend- ing) ..... | 4  |
| Carboniferous rocks of the Black Hills .....                                                       |    |
| Lower Silurian .....                                                                               |    |
| Potodam sandstone .....                                                                            |    |
| Metamorphic and igneous rocks .....                                                                |    |
| <i>Pentacrinus astericus</i> , n. s., M. & H., 1858 .....                                          | 4  |
| <i>Lingula brevisrostris</i> , n. s., M. & H., 1858 .....                                          |    |
| <i>Inoceramus umbonatus</i> , n. s., M. & H., 1858 .....                                           |    |
| <i>Avicula</i> ( <i>Monotis</i> ) <i>tenuicostata</i> , n. s., M. & H., 1858 .....                 | 8  |
| <i>Mytilus pertenuis</i> , n. s., M. & H., 1858 .....                                              |    |
| <i>Arca</i> ( <i>Cucullaria</i> ) <i>incornata</i> , n. s., M. & H., 1858 .....                    |    |
| <i>Unio nivalis</i> , n. s., M. & H., 1858 .....                                                   |    |
| <i>Corbula incornata</i> , n. s., M. & H., 1858 .....                                              |    |
| <i>Panopaea</i> ( <i>Myacites</i> ) <i>subelliptica</i> , n. s., M. & H., 1858 .....               | 5  |
| <i>Terris globosus</i> , n. s., M. & H., 1858 .....                                                |    |
| <i>Pholas cuneata</i> , n. s., M. & H., 1858 .....                                                 |    |
| <i>Astarte</i> ( <i>Sidula</i> ) <i>attenuata</i> , n. s., M. & H., 1858 .....                     |    |
| <i>Helicorras</i> ? <i>lortus</i> , n. s., M. & H., 1858 .....                                     | 5  |
| <i>Turridites</i> ? <i>Helicorras</i> ? <i>cochleatus</i> , n. s., M. & H., 1858 .....             | 5  |
| <i>Turridites</i> ? <i>umbilicatus</i> , n. s., M. & H., 1858 .....                                |    |



|                                                                                 | Page. |
|---------------------------------------------------------------------------------|-------|
| <i>Helicoceras tenuicostatus</i> , n. s., M. & H., 1858 .....                   | 56    |
| <i>Aneyloceras</i> ( <i>Hamites</i> ) <i>uncus</i> , n. s., M. & H., 1858 ..... | 56-57 |
| <i>Ammonites cordiformis</i> , n. s., M. & H., 1858 .....                       | 57    |
| <i>Ammonites henryi</i> , n. s., M. & H., 1858 .....                            | 57-58 |
| <i>Scaphites larvaformis</i> , n. s., M. & H., 1858 .....                       | 58    |
| <i>Belemnites densus</i> , n. s., M. & H., 1858 .....                           | 58-59 |

12.

MEEK, F. B., and HAYDEN, F. V. Remarks on the Lower Cretaceous beds of Kansas and Nebraska, together with descriptions of Carboniferous fossils from the valley of Kansas River. <Proc. Acad. Nat. Sci. Phila., vol. x, pp. 256-264. 1858. Philadelphia, 1859.

|                                                                               | Page.   |
|-------------------------------------------------------------------------------|---------|
| Description of new Carboniferous fossils .....                                | 260     |
| <i>Fusulina cylindrica</i> , Fischer .....                                    | 260-261 |
| <i>F. cylindrica</i> var. <i>ventricosa</i> , M. & H., 1858 .....             | 261     |
| <i>Orthisina crassa</i> , n. s., M. & H., 1858 .....                          | 261     |
| <i>Chonetes mucronata</i> , n. s., M. & H., 1858 .....                        | 262     |
| <i>Azinus</i> ( <i>Schizodus</i> ) <i>ovatus</i> , n. s., M. & H., 1858 ..... | 262     |
| <i>Allorisma</i> ? <i>altirostrata</i> , n. s., M. & H., 1858 .....           | 263     |
| <i>Allorisma subcuneata</i> , n. s., M. & H., 1858 .....                      | 263     |
| <i>Allorisma</i> ? <i>leavenworthensis</i> , n. s., M. & H., 1858 .....       | 263-264 |
| <i>Allorisma</i> ? <i>cooperi</i> , M. & H., (1858) .....                     | 264     |
| <i>Pleurotomaria subturbinata</i> , n. s., M. & H., 1858 .....                | 264     |
| <i>Pleurotomaria humerosa</i> , n. s., M. & H., 1858 .....                    | 264     |

13

MEEK, F. B., and HAYDEN, F. V. Descriptions of new organic remains from North-eastern Kansas, indicating the existence of Permian rocks in that territory. <Trans. Albany Institute, vol. iv, pp. 73-88. 1858. Albany, 1858-1864.

This includes a note in relation to the priority of discovery of these fossils of Permian type.

DESCRIPTIONS OF FOSSILS.

|                                                                                          | Page. |
|------------------------------------------------------------------------------------------|-------|
| <i>Monotis hawni</i> , n. s., M. & H., 1858 .....                                        | 76-77 |
| <i>Myalina</i> ( <i>Mytelus</i> ) <i>perattenuata</i> , n. s., M. & H., 1858 .....       | 77-78 |
| <i>Bakevellia parva</i> , n. s., M. & H., 1858 .....                                     | 78-79 |
| <i>Leda</i> ( <i>Nucula</i> ) <i>subscitula</i> , n. s., M. & H., 1858 .....             | 79    |
| <i>Edmondia</i> ? <i>calhouni</i> , n. s., M. & H., 1858 .....                           | 80    |
| <i>Pleurophorus</i> ? <i>occidentalis</i> , n. s., M. & H., 1858 .....                   | 80-81 |
| <i>Pleurophorus</i> ? ( <i>Cardinea</i> ) <i>subcuneata</i> , n. s., M. & H., 1858 ..... | 81-82 |
| <i>Lyonsia</i> ( <i>Panopæa</i> ) <i>conceva</i> , n. s., M. & H., 1858 .....            | 82-83 |
| <i>Panopæa cooperi</i> , n. s., M. & H., 1858 .....                                      | 83    |
| <i>Nautilus eccentricus</i> , n. s., M. & H., 1858 .....                                 | 83-84 |

14

MEEK, F. B., and HAYDEN, F. V. Geological explorations in Kansas Territory. <Proc. Acad. Nat. Sci. Phila., vol. xi, pp. 8-30. 1859. Philadelphia, 1860.

|                                                                                                                                               | Page. |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-------|
| General section of the rocks of Kansas valley from the Cretaceous down, so as to include portions of the upper Coal measures .....            | 16-18 |
| List of the species mentioned in this paper, with some remarks on the synonymy, and references to the works in which they are described ..... | 24-30 |
| <i>Foraminifera</i> .....                                                                                                                     | 24    |
| <i>Fusulina cylindrica</i> , Fischer .....                                                                                                    | 24    |
| <i>Fusulina cylindrica</i> var. <i>ventricosa</i> , M. & H. ....                                                                              | 24    |
| <i>Bryozoa</i> .....                                                                                                                          | 24    |
| <i>Syncladia biserialis</i> , Swallow .....                                                                                                   | 24    |
| <i>Acanthocladia americana</i> , Swallow .....                                                                                                | 24    |
| <i>Echinodermata</i> .....                                                                                                                    | 24    |
| <i>Cyathocrinus</i> ———? .....                                                                                                                | 24    |
| <i>Archæocidaris</i> ———? .....                                                                                                               | 25    |
| <i>Archæocidaris</i> ———? .....                                                                                                               | 25    |

P

|                                                                            |   |
|----------------------------------------------------------------------------|---|
| <i>Brachiopoda</i> .....                                                   |   |
| <i>Dicina tenuilineata</i> , n. s., M. & H., 1858 .....                    |   |
| <i>D. manhattanensis</i> , n. s., M. & H., 1858 .....                      |   |
| <i>Productus splendens</i> (?) Norwood & Pratten .....                     |   |
| <i>P. norwoodi</i> , Swallow .....                                         |   |
| <i>P. rogersi</i> , Norwood & Pratten .....                                |   |
| <i>P. pustulosus</i> (?), Phillips .....                                   |   |
| <i>P. prattenianus</i> , Norwood .....                                     |   |
| <i>P. calhounianus</i> , Swallow .....                                     |   |
| <i>Onones verneuiliana</i> , Norwood & Pratten .....                       |   |
| <i>O. mucronata</i> , M. & H., 1858 .....                                  |   |
| <i>Orthosina crassa</i> , M. & H., 1858 .....                              |   |
| <i>O. umbraculum</i> ?, Schlot sp. ....                                    |   |
| <i>O. missouriensis</i> , Swallow .....                                    |   |
| <i>O. shumardiana</i> , Swallow .....                                      |   |
| <i>Terebratula millepunctata</i> , Hall .....                              | 1 |
| <i>Rhynchonella uta</i> , Maroon .....                                     |   |
| <i>Ratzia mormoni</i> , Maroon .....                                       |   |
| <i>Spirifer kentuckensis</i> , Shumard .....                               |   |
| <i>S. cameratus</i> , Morton .....                                         |   |
| <i>S. hemiplicata</i> , Hall .....                                         |   |
| <i>S. lineatus</i> , Phillips .....                                        |   |
| <i>Spirifer</i> , ——— .....                                                |   |
| <i>S. planiconveza</i> , Shumard .....                                     |   |
| <i>Spirigera subtilita</i> , Shumard .....                                 |   |
| <i>Spirigera</i> ——— ? .....                                               |   |
| <i>Lamellibranchiata</i> .....                                             |   |
| <i>Monotis hawni</i> , M. & H., 1858 .....                                 |   |
| <i>Myalina</i> ( <i>Mytilus</i> ) <i>peratenuata</i> , M. & H., 1858 ..... | 1 |
| <i>Myalina squamosa</i> (J. de C.) Sowerby .....                           |   |
| <i>M. subquadrata</i> , Shumard .....                                      |   |
| <i>Edmondia</i> ? <i>calhouni</i> , M. & H., 1858 .....                    |   |
| <i>Bakevellia parva</i> , M. & H., 1858 .....                              |   |
| <i>Arca carbonaria</i> , Cox .....                                         |   |
| <i>Leda subcutila</i> , M. & H., 1858 .....                                |   |
| <i>Pleurophorus</i> ? <i>subcuneata</i> , M. & H., 1858 .....              |   |
| <i>Axinus</i> ( <i>Schizodus</i> ) <i>ovatus</i> , M. & H., 1858 .....     |   |
| <i>Axinus rotundatus</i> , Brown .....                                     |   |
| <i>Alorisma</i> ? <i>leavenworthensis</i> , M. & H., 1858 .....            |   |
| <i>A. subcuneata</i> , M. & H., 1858 .....                                 |   |
| <i>A. ? altirostrata</i> , M. & H., 1858 .....                             |   |
| <i>A. ? cooperi</i> , M. & H., 1858 .....                                  |   |
| <i>Leptodomus granosus</i> , Shumard .....                                 |   |
| <i>Gasteropoda</i> .....                                                   |   |
| <i>Pleurotomaria humerosa</i> , M. & H., 1858 .....                        |   |
| <i>P. subturbinata</i> , M. & H., 1858 .....                               |   |
| <i>Bellerophon</i> ——— ? .....                                             |   |
| <i>Euomphalus</i> ——— ? .....                                              |   |
| <i>Cephalopoda</i> .....                                                   |   |
| <i>Nautilus eccentricus</i> , M. & H., 1858 .....                          |   |
| <i>Fishes</i> .....                                                        |   |
| <i>Xystacanthus arcuatus</i> , Leidy .....                                 |   |
| <i>Cladodus occidentalis</i> , Leidy .....                                 |   |
| <i>Petalodus alleghaniensis</i> , Leidy .....                              |   |

## 15.

MEEK, F. B., and HAYDEN, F. V. On a new genus of Patelliform shells from Cretaceous rocks of Nebraska. < Am. Journ. Sci., vol. xxix, 2d ser., pp. 33-plate i. 1860. New Haven, 1860.

Genus *Anisomyon*,\* n. g., M. & H., 1860.

P1

*Anisomyon patelliformis*, M. & H., pl. i, figs. 1-3. ....

P2

\* *Anisos*, unequal; *μῦς*, muscle; in allusion to the unsymmetrical muscular scar.

|                                                                                 | Page. |
|---------------------------------------------------------------------------------|-------|
| <i>Helicoceras tenuicostatus</i> , n. s., M. & H., 1858 .....                   | 56    |
| <i>Ancylloceras</i> ( <i>Hamites</i> ) <i>uncus</i> , n. s., M. & H., 1858..... | 56-57 |
| <i>Ammonites cordiformis</i> , n. s., M. & H., 1858.....                        | 57    |
| <i>Ammonites henryi</i> , n. s., M. & H., 1858.....                             | 57-58 |
| <i>Scaphites larviformis</i> , n. s., M. & H., 1858 .....                       | 58    |
| <i>Belemnites densus</i> , n. s., M. & H., 1858 .....                           | 58-59 |

12.

MEEK, F. B., and HAYDEN, F. V. Remarks on the Lower Cretaceous beds of Kansas and Nebraska, together with descriptions of Carboniferous fossils from the valley of Kansas River. <Proc. Acad. Nat. Sci. Phila., vol. x, pp. 256-264. 1858. Philadelphia, 1859.

|                                                                              | Page.   |
|------------------------------------------------------------------------------|---------|
| Description of new Carboniferous fossils.....                                | 260     |
| <i>Fusulina cylindrica</i> , Fischer .....                                   | 260-261 |
| <i>F. cylindrica</i> var. <i>ventricosa</i> , M. & H., 1858.....             | 261     |
| <i>Orthisina crassa</i> , n. s., M. & H., 1858.....                          | 261     |
| <i>Chonetes mucronata</i> , n. s., M. & H., 1858.....                        | 262     |
| <i>Azinus</i> ( <i>Schizodus</i> ) <i>ovatus</i> , n. s., M. & H., 1858..... | 262     |
| <i>Allorisma</i> ? <i>altirostrata</i> , n. s., M. & H., 1858.....           | 263     |
| <i>Allorisma subcuneata</i> , n. s., M. & H., 1858 .....                     | 263     |
| <i>Allorisma</i> ? <i>leavenworthensis</i> , n. s., M. & H., 1858.....       | 263-264 |
| <i>Allorisma</i> ? <i>cooperi</i> , M. & H., (1858).....                     | 264     |
| <i>Pleurotomaria subturbinata</i> , n. s., M. & H., 1858.....                | 264     |
| <i>Pleurotomaria humerosa</i> , n. s., M. & H., 1858.....                    | 264     |

13

MEEK, F. B., and HAYDEN, F. V. Descriptions of new organic remains from Northeastern Kansas, indicating the existence of Permian rocks in that territory. <Trans. Albany Institute, vol. iv, pp. 73-88. 1858. Albany, 1858-1864.

This includes a note in relation to the priority of discovery of these fossils of Permian type.

DESCRIPTIONS OF FOSSILS.

|                                                                                          | Page. |
|------------------------------------------------------------------------------------------|-------|
| <i>Monotis hawesi</i> , n. s., M. & H., 1858 .....                                       | 76-77 |
| <i>Myalina</i> ( <i>Mytelus</i> ) <i>perattenuata</i> , n. s., M. & H., 1858.....        | 77-78 |
| <i>Bakevellia parva</i> , n. s., M. & H., 1858 .....                                     | 78-79 |
| <i>Leda</i> ( <i>Nucula</i> ) <i>subscitula</i> , n. s., M. & H., 1858 .....             | 79    |
| <i>Edmondia</i> ? <i>calhouni</i> , n. s., M. & H., 1858.....                            | 80    |
| <i>Pleurophorus</i> ? <i>occidentalis</i> , n. s., M. & H., 1858.....                    | 80-81 |
| <i>Pleurophorus</i> ? ( <i>Cardinea</i> ) <i>subcuneata</i> , n. s., M. & H., 1858 ..... | 81-82 |
| <i>Lyonsia</i> ( <i>Panopæa</i> ) <i>concava</i> , n. s., M. & H., 1858 .....            | 82-83 |
| <i>Panopæa cooperi</i> , n. s., M. & H., 1858.....                                       | 83    |
| <i>Nautilus eccentricus</i> , n. s., M. & H., 1858.....                                  | 83-84 |

14

MEEK, F. B., and HAYDEN, F. V. Geological explorations in Kansas Territory. <Proc. Acad. Nat. Sci. Phila., vol. xi, pp. 8-30. 1859. Philadelphia, 1860.

|                                                                                                                                              | Page. |
|----------------------------------------------------------------------------------------------------------------------------------------------|-------|
| General section of the rocks of Kansas valley from the Cretaceous down, so as to include portions of the upper Coal measures.....            | 16-18 |
| List of the species mentioned in this paper, with some remarks on the synonymy, and references to the works in which they are described..... | 24-30 |
| <i>Foraminifera</i> .....                                                                                                                    | 24    |
| <i>Fusulina cylindrica</i> , Fischer.....                                                                                                    | 24    |
| <i>Fusulina cylindrica</i> var. <i>ventricosa</i> , M. & H. ....                                                                             | 24    |
| <i>Bryozoa</i> .....                                                                                                                         | 24    |
| <i>Syncladia biserialis</i> , Swallow .....                                                                                                  | 24    |
| <i>Acanthocladia americana</i> , Swallow.....                                                                                                | 24    |
| <i>Echinodermata</i> .....                                                                                                                   | 24    |
| <i>Cyathocrinus</i> ———?.....                                                                                                                | 24    |
| <i>Archaeoidaria</i> ———?.....                                                                                                               | 25    |
| <i>Archaeoidaria</i> ———?.....                                                                                                               | 25    |



|                                                                             | Page. |
|-----------------------------------------------------------------------------|-------|
| <i>Brachiopoda</i> .....                                                    | 25    |
| <i>Discina tenuilineata</i> , n. s., M. & H., 1859 .....                    | 25    |
| <i>D. manhattanensis</i> , n. s., M. & H., 1859 .....                       | 25    |
| <i>Productus splendens</i> (?) Norwood & Pratten .....                      | 25    |
| <i>P. norwoodi</i> , Swallow .....                                          | 25    |
| <i>P. rogersi</i> , Norwood & Pratten .....                                 | 26    |
| <i>P. pustulosus</i> (?), Phillips .....                                    | 26    |
| <i>P. prattenianus</i> , Norwood .....                                      | 26    |
| <i>P. calhounianus</i> , Swallow .....                                      | 26    |
| <i>Chonetes verneuilliana</i> , Norwood & Pratten .....                     | 26    |
| <i>C. mucronata</i> , M. & H., 1858 .....                                   | 26    |
| <i>Orthisina crassa</i> , M. & H., 1858 .....                               | 26    |
| <i>O. umbraculum</i> ?, Schlot sp. ....                                     | 26    |
| <i>O. missouriensis</i> , Swallow .....                                     | 26    |
| <i>O. shumardiana</i> , Swallow .....                                       | 26    |
| <i>Terebratula millepunctata</i> , Hall .....                               | 26-27 |
| <i>Rhynchonella uta</i> , Marcou .....                                      | 27    |
| <i>Retzia mormonii</i> , Marcou .....                                       | 27    |
| <i>Spirifer kentuckensis</i> , Shumard .....                                | 27    |
| <i>S. cameratus</i> , Morton .....                                          | 27    |
| <i>S. hemiplicata</i> , Hall .....                                          | 28    |
| <i>S. lineatus</i> , Phillips .....                                         | 28    |
| <i>Spirifer</i> , ——— .....                                                 | 28    |
| <i>S. planoconvexa</i> , Shumard .....                                      | 28    |
| <i>Spirigera subtilita</i> , Shumard .....                                  | 28    |
| <i>Spirigera</i> ———? .....                                                 | 28    |
| <i>Lamellibranchiata</i> .....                                              | 28    |
| <i>Monotis haweni</i> , M. & H., 1858 .....                                 | 28    |
| <i>Myalina</i> ( <i>Mytilus</i> ) <i>perattenuata</i> , M. & H., 1858 ..... | 28-29 |
| <i>Myalina squamosa</i> (J. de C.) Sowerby .....                            | 29    |
| <i>M. subquadrata</i> , Shumard .....                                       | 29    |
| <i>Edmondia</i> ? <i>calhouni</i> , M. & H., 1858 .....                     | 29    |
| <i>Bakevellia parva</i> , M. & H., 1858 .....                               | 29    |
| <i>Arca carbonaria</i> , Cox .....                                          | 29    |
| <i>Leda subscitula</i> , M. & H., 1858 .....                                | 29    |
| <i>Pleurophorus</i> ? <i>subcuneata</i> , M. & H., 1858 .....               | 29    |
| <i>Axinus</i> ( <i>Schizodus</i> ) <i>ovatus</i> , M. & H., 1858 .....      | 29    |
| <i>Axinus rotundatus</i> , Brown .....                                      | 29    |
| <i>Allorisma</i> ? <i>leavenworthensis</i> , M. & H., 1858 .....            | 29    |
| <i>A. subcuneata</i> , M. & H., 1858 .....                                  | 29    |
| <i>A. altirostrata</i> , M. & H., 1858 .....                                | 29    |
| <i>A. cooperi</i> , M. & H., 1858 .....                                     | 29    |
| <i>Leptodomus granosus</i> , Shumard .....                                  | 29    |
| <i>Gasteropoda</i> .....                                                    | 30    |
| <i>Pleurotomaria humerosa</i> , M. & H., 1858 .....                         | 30    |
| <i>P. subturbinata</i> , M. & H., 1858 .....                                | 30    |
| <i>Bellerophon</i> ———? .....                                               | 30    |
| <i>Euomphalus</i> ———? .....                                                | 30    |
| <i>Cephalopoda</i> .....                                                    | 30    |
| <i>Nautilus eccentricus</i> , M. & H., 1858 .....                           | 30    |
| <i>Fishes</i> .....                                                         | 30    |
| <i>Xystacanthus arcuatus</i> , Leidy .....                                  | 30    |
| <i>Cladodus occidentalis</i> , Leidy .....                                  | 30    |
| <i>Petalodus alleghaniensis</i> , Leidy .....                               | 30    |

## 15.

MEEK, F. B., and HAYDEN, F. V. On a new genus of Patelliform shells from the Cretaceous rocks of Nebraska. < Am. Journ. Sci., vol. xxix, 2d ser., pp. 33-35, plate i. 1860. New Haven, 1860.

Genus *Anisomyon*,\* n. g., M. & H., 1860.

|                                                                  | Page. |
|------------------------------------------------------------------|-------|
| <i>Anisomyon patelliformis</i> , M. & H., pl. i, figs. 1-3. .... | 34-35 |

\* *Anisos*, unequal; *μῦον*, muscle; in allusion to the unsymmetrical muscular scar.

|                                                                                                                         | Page. |
|-------------------------------------------------------------------------------------------------------------------------|-------|
| The authors refer the following Nebraska species to this genus:                                                         |       |
| <i>Anisomyon borealis</i> (= <i>Hippomyx borealis</i> , Morton, 1842, = <i>Helcium carinatum</i> , M. & H., 1856) ..... | 35    |
| <i>Anisomyon sezzulcatus</i> (= <i>Helcium sezzulcatum</i> , M. & H.) .....                                             | 35    |
| <i>Anisomyon alveolus</i> (= <i>Helcium alveolum</i> , M. & H.) .....                                                   | 35    |
| <i>Anisomyon patelliformis</i> (= <i>Helcium patelliforme</i> , M. & H.) .....                                          | 35    |
| <i>Anisomyon subovatus</i> (= <i>Helcium subovatum</i> , M. & H.) .....                                                 | 35    |

16.

MEEK, F. B., and HAYDEN, F. V. Descriptions of new organic remains from the Tertiary, Cretaceous, and Jurassic rocks of Nebraska. <Proc. Acad. Nat. Sci. Phila., vol. xii, pp. 175-184. 1860. Philadelphia, 1861.

A description of the Carboniferous species *Myalina aviculoides* is also added; also a corrected list of fossils.

TERTIARY SPECIES.

|                                                                                       | Page.   |
|---------------------------------------------------------------------------------------|---------|
| <i>Gasteropoda</i> .....                                                              | 175     |
| <i>Helix evansi</i> , n. s., [M.] & H., 1860 .....                                    | 175     |
| <i>Planorbis vetulus</i> , n. s., M. & H., 1860 .....                                 | 175     |
| <i>Planorbis leidyi</i> , n. s., M. & H., 1860 .....                                  | 175     |
| <i>Conchifera</i> .....                                                               | 175     |
| <i>Sphaerium planum</i> , n. s., M. & H., 1860 .....                                  | 175-176 |
| <i>Sphaerium recticardinale</i> , n. s., M. & H., 1860 .....                          | 176     |
| <i>Cyrena</i> ( <i>Corbicula</i> ?) <i>cytheriformis</i> , n. s., M. & H., 1860 ..... | 176     |

CRETACEOUS SPECIES.

|                                                                   |         |
|-------------------------------------------------------------------|---------|
| <i>Cephalopoda</i> .....                                          | 176     |
| <i>Phylloteuthis</i> , n. g., M. & H., 1860 .....                 | 176     |
| <i>Phylloteuthis subovatus</i> , n. s., M. & H., 1860 .....       | 176     |
| <i>Helicoceras angulatum</i> , n. s., M. & H., 1860 .....         | 176     |
| <i>Ammonites placenta</i> var. <i>intercalaris</i> , M. & H. .... | 177     |
| <i>Ammonites vermillionensis</i> , n. s., M. & H., 1860 .....     | 177     |
| <i>Scaphites nodosus</i> var. <i>plenus</i> , M. & H. ....        | 177-178 |
| <i>Gasteropoda</i> .....                                          | 178     |
| <i>Aporrhais parva</i> , n. s., M. & H., 1860 .....               | 178     |
| <i>Aporrhais sublevis</i> , n. s., M. & H., 1860 .....            | 178     |
| <i>Dentalium pauperculum</i> , n. s., M. & H., 1860 .....         | 178     |
| <i>Cylichna scitula</i> , n. s., M. & H., 1860 .....              | 178     |
| <i>Conchifera</i> .....                                           | 178     |
| <i>Teredo selliformis</i> , n. s., M. & H., 1860 .....            | 178-179 |
| <i>Maestra siouzensis</i> , n. s., M. & H., 1860 .....            | 179     |
| <i>Maestra gracilis</i> , n. s., M. & H., 1860 .....              | 179     |
| <i>Tellina</i> ? <i>formosa</i> , n. s., M. & H., 1860 .....      | 179     |
| <i>Cyprina humilis</i> , n. s., M. & H., 1860 .....               | 179-180 |
| <i>Avicula subgibbosa</i> , n. s., M. & H., 1860 .....            | 180     |
| <i>Inoceramus cuneatus</i> , n. s., M. & H., 1860 .....           | 180     |
| <i>Inoceramus vanuxemi</i> , n. s., M. & H., 1860 .....           | 180     |
| <i>Inoceramus balchii</i> , n. s., M. & H., 1860 .....            | 180-181 |
| <i>Inoceramus subcompressus</i> , n. s., M. & H., 1860 .....      | 181     |
| <i>Inoceramus aviculoid[e]s</i> , n. s., M. & H., 1860 .....      | 181     |
| <i>Anomia obliqua</i> , n. s., M. & H., 1860 .....                | 181     |
| <i>Anomia subtrigonalis</i> , n. s., M. & H., 1860 .....          | 181     |
| <i>Ostrea inornata</i> , n. s., M. & H., 1860 .....               | 181-182 |

JURASSIC SPECIES.

|                                                                       |         |
|-----------------------------------------------------------------------|---------|
| <i>Conchifera</i> .....                                               | 182     |
| <i>Pholadomya humilis</i> , n. s., M. & H., 1860 .....                | 182     |
| <i>Myacites nebrascensis</i> , n. s., M. & H., 1860 .....             | 182     |
| <i>Thracia</i> ? <i>sublevis</i> , n. s., M. & H., 1860 .....         | 182     |
| <i>Thracia</i> ? <i>arcuata</i> , n. s., M. & H., 1860 .....          | 182     |
| <i>Cardium shumardi</i> , n. s., M. & H., 1860 .....                  | 182-183 |
| <i>Tancredia</i> ? <i>aequilateralis</i> , n. s., M. & H., 1860 ..... | 183     |
| <i>Tancredia warrenana</i> , n. s., M. & H., 1860 .....               | 183     |



|                                                      | Page.   |
|------------------------------------------------------|---------|
| <i>Astarte fragilis</i> , n. s., M. & H., 1860.....  | 183     |
| <i>Astarte inornata</i> , n. s., M. & H., 1860.....  | 183     |
| <i>Trigonia conradi</i> , n. s., M. & H., 1860.....  | 183-184 |
| <i>Pecten extenuatus</i> , n. s., M. & H., 1860..... | 184     |

## 17.

MEEK, F. B. Descriptions of new fossil remains collected in Nebraska and Utah by the exploring expeditions under the command of Capt. J. H. Simpson, of the U. S. topographical engineers (extracted from that officer's forthcoming report). <Proc. Acad. Nat. Sci. Phila., vol. xii, pp. 308-315. 1860. Philadelphia, 1861.

Devonian, Carboniferous, Jurassic, Cretaceous, and Tertiary. Republished with illustrations in a quarto volume of Captain Simpson's Reports, in 1876.

## DEVONIAN SPECIES.

|                                                            | Page.   |
|------------------------------------------------------------|---------|
| <i>Brachiopoda</i> .....                                   | 308     |
| <i>Spirifera norwoodi</i> , n. s., Meek, 1860.....         | 308     |
| <i>Spirifera engelmanni</i> , n. s., F. B. Meek, 1860..... | 308-309 |
| <i>Spirifera macra</i> , n. s., F. B. Meek, 1860.....      | 309     |

## CARBONIFEROUS SPECIES.

|                                                               |         |
|---------------------------------------------------------------|---------|
| <i>Brachiopoda</i> .....                                      | 309     |
| <i>Productus semistriatus</i> , n. s., F. B. Meek, 1860.....  | 309     |
| <i>Productus multistriatus</i> , n. s., F. B. Meek, 1860..... | 309-310 |
| <i>Spirifera scobina</i> , n. s., F. B. Meek, 1860.....       | 310     |
| <i>Spirifera pulchra</i> , n. s., F. B. Meek, 1860.....       | 310     |
| <i>Conchifera</i> .....                                       | 310     |
| <i>Pecten utahensis</i> , n. s., F. B. Meek, 1860.....        | 310     |
| <i>Cephalopoda</i> .....                                      |         |
| <i>Orthoceras baculum</i> , n. s., F. B. Meek, 1860.....      | 310-311 |

## JURASSIC SPECIES.

|                                                                      |     |
|----------------------------------------------------------------------|-----|
| <i>Conchifera</i> .....                                              | 311 |
| <i>Ostrea engelmanni</i> , n. s., F. B. Meek, 1860.....              | 311 |
| <i>Pecten bellistriata</i> , n. s., F. B. Meek, 1860.....            | 311 |
| <i>Gasteropoda</i> .....                                             | 311 |
| <i>Dentalium?</i> <i>subquadratum</i> , n. s., F. B. Meek, 1860..... | 311 |

## CRETACEOUS SPECIES.

|                                                           |         |
|-----------------------------------------------------------|---------|
| <i>Conchifera</i> .....                                   | 311     |
| <i>Anomia concentrica</i> , n. s., F. B. Meek, 1860.....  | 311-312 |
| <i>Inoceramus simpsoni</i> , n. s., F. B. Meek, 1860..... | 312     |

## TERTIARY SPECIES.

|                                                                                  |         |
|----------------------------------------------------------------------------------|---------|
| <i>Conchifera</i> .....                                                          | 312     |
| <i>Unio vetusta</i> , n. s., Meek, 1860.....                                     | 312     |
| <i>Unio haydeni</i> , n. s., Meek, 1860.....                                     | 312     |
| <i>Corbula</i> ( <i>Potamomya?</i> ) <i>pyriformis</i> , n. s., Meek, 1860.....  | 312-313 |
| <i>Corbula</i> ( <i>Potamomya?</i> ) <i>concentrica</i> , n. s., Meek, 1860..... | 313     |
| <i>Corbula</i> ( <i>Potamomya?</i> ) <i>engelmanni</i> , n. s., Meek, 1860.....  | 313     |
| <i>Gasteropoda</i> .....                                                         | 313     |
| <i>Melania humerosa</i> , n. s., Meek, 1860.....                                 | 313     |
| <i>Melania simpsoni</i> , n. s., Meek, 1860.....                                 | 313-314 |
| <i>Melania arcta</i> , n. s., Meek, 1860.....                                    | 314     |
| <i>Melania?</i> <i>nitidula</i> , n. s., Meek, 1860.....                         | 314     |
| <i>Planorbis spectabilis</i> , n. s., Meek, 1860.....                            | 314     |
| <i>Planorbis utahensis</i> , n. s., Meek, 1860.....                              | 314     |
| <i>Limnæa vetusta</i> , n. s., Meek, 1860.....                                   | 314     |
| <i>Limnæa similis</i> , n. s., Meek, 1860.....                                   | 314     |
| <i>Melampus priscus</i> , n. s., Meek, 1860.....                                 | 315     |

## 18.

MEEK, F. B., and HAYDEN, F. V. Systematic catalogue with synonymy, &c., of Jurassic, Cretaceous, and Tertiary fossils, collected in Nebraska by the exploring expeditions under the command of Lieut. G. K. Warren, of U. S. Topographical Engineers. <Proc. Acad. Nat. Sci. Phila., vol. xii, pp. 417-432. 1860. Philadelphia, 1861.

Of the 276 species and varieties enumerated in the following catalogue, 25 are from Jurassic rocks, 194 from Cretaceous, and the remaining 57 from Tertiary strata.

|                         | Page.   |
|-------------------------|---------|
| Jurassic species.....   | 417-419 |
| Cretaceous species..... | 419-430 |
| Tertiary species.....   | 430-432 |

## 19.

MEEK, F. B., and WORTHEN, A. H. Descriptions of new species of Crinoidea and Echinoidea, from the Carboniferous rocks of Illinois and other western States. <Proc. Acad. Nat. Sci. Phila., vol. xii, pp. 379-397. 1860. Philadelphia, 1861.

Afterward republished in the Illinois Geological Reports, vol. ii.

|                                                                    | Page.   |
|--------------------------------------------------------------------|---------|
| <i>Platyerinus</i> , Miller.....                                   | 379     |
| <i>P. prattenanus</i> , n. s., M. & W., 1860.....                  | 379-380 |
| <i>P. penicillus</i> , n. s., M. & W., 1860.....                   | 380     |
| <i>P. plenus</i> , n. s., M. & W., 1860.....                       | 380-381 |
| <i>Dichocrinus</i> , Munster.....                                  | 381     |
| <i>D. constrictus</i> , n. s., M. & W., 1860.....                  | 381     |
| <i>D. conus</i> , n. s., M. & W., 1860.....                        | 381-382 |
| <i>D. (Pterotocrinus) crassus</i> , n. s., M. & W., 1860.....      | 382-383 |
| <i>D. (Pterotocrinus) chesterensis</i> , n. s., M. & W., 1860..... | 383     |
| <i>Trematocrinus</i> , Hall, 1860.....                             | 383     |
| <i>T. fascellus</i> , n. s., M. & W., 1860.....                    | 383-384 |
| <i>Actinocrinus</i> , Miller.....                                  | 384     |
| <i>A. validus</i> , n. s., M. & W., 1860.....                      | 384-385 |
| <i>A. asteriscus</i> , n. s., M. & W., 1860.....                   | 385-386 |
| <i>A. speciosus</i> , n. s., M. & W., 1860.....                    | 386     |
| <i>A. scitulus</i> , n. s., M. & W., 1860.....                     | 386-387 |
| <i>A. araneolus</i> , n. s., M. & W., 1860.....                    | 387-388 |
| <i>A. (Amphorocrinus) subtrubatus</i> , n. s., M. & W., 1860.....  | 388-389 |
| <i>Forbiocrinus</i> , De Koninck & Le Hon.....                     | 389     |
| <i>F. ? norwoodi</i> , n. s., M. & W., 1860.....                   | 389     |
| <i>F. ? semioatus</i> , n. s., M. & W., 1860.....                  | 389-390 |
| <i>Zeacrinus</i> , Troost.....                                     | 390     |
| <i>Z. discus</i> , n. s., M. & W., 1860.....                       | 390     |
| <i>Z. troostanus</i> , n. s., M. & W., 1860.....                   | 390-391 |
| <i>Z. planobrachiatas</i> , n. s., M. & W., 1860.....              | 391     |
| <i>Cyathocrinus</i> , Miller.....                                  | 391     |
| <i>C. saffordi</i> , n. s., M. & W., 1860.....                     | 391-392 |
| <i>C. ? sangamonensis</i> , n. s., M. & W., 1860.....              | 392     |
| <i>C. ? crassus</i> , n. s., M. & W., 1860.....                    | 392-393 |
| <i>C. scitulus</i> , n. s., M. & W., 1860.....                     | 393     |
| <i>C. angulatus</i> , n. s., M. & W., 1860.....                    | 393-394 |
| <i>Poteriocrinus</i> , Miller.....                                 | 394     |
| <i>P. (Scaphiocrinus) decadactylus</i> , n. s., M. & W., 1860..... | 394     |
| <i>P. seallori</i> , n. s., M. & W., 1860.....                     | 394-395 |
| <i>Echinoidea</i> .....                                            |         |
| <i>Archæocidaris</i> , McCoy.....                                  | 395     |
| <i>A. mucronatus</i> , n. s., M. & W., 1860.....                   | 395-396 |
| <i>Palæchinus</i> , McCoy.....                                     | 396     |
| <i>P. burlingtonensis</i> , n. s., M. & W., 1860.....              | 396     |
| <i>Melonites</i> , Owen & Norwood.....                             | 396-397 |
| <i>M. danae</i> , n. s., M. & W., 1860.....                        | 397     |



MEEK, F. B., and WORTHEN, A. H. Descriptions of new Carboniferous fossils, from Illinois and other Western States. <Proc. Acad. Nat. Sci. Phila., vol. xii, pp. 447-472. 1860. Philadelphia, 1861.

Genera *Sphenopoterium*, *Soleniscus*. Afterward republished in the Illinois Geological Reports, vol. ii.

|                                                                                       | Page.   |
|---------------------------------------------------------------------------------------|---------|
| <i>Zoophyta</i> .....                                                                 |         |
| <i>Sphenopoterium</i> ,* n. g., M. & W., 1860.....                                    | 447-448 |
| <i>S. obtusum</i> , n. s., M. & W., 1860.....                                         | 448     |
| <i>S. compressum</i> , n. s., M. & W., 1860.....                                      | 448     |
| <i>S. enorme</i> , n. s., M. & W., 1860.....                                          | 448     |
| <i>S. cuneatum</i> , n. s., M. & W., 1860.....                                        | 448     |
| <i>Echinodermata</i> .....                                                            | 449     |
| <i>Asteridea</i> .....                                                                | 449     |
| <i>Palasterina</i> , McCoy.....                                                       | 449     |
| Subgenus <i>Schoenaster</i> .....                                                     | 449     |
| <i>Palasterina</i> ( <i>Schoenaster</i> ) <i>fibriata</i> , n. s., M. & W., 1860..... | 449     |
| <i>Mollusca</i> .....                                                                 | 450     |
| <i>Brachiopoda</i> .....                                                              | 450     |
| <i>Chonetes</i> , Fischer.....                                                        | 450     |
| <i>C. planumbona</i> , n. s., M. & W., 1860.....                                      | 450     |
| <i>Productus</i> , Sowerby.....                                                       | 450     |
| <i>P. nanus</i> , n. s., M. & W., 1860.....                                           | 450     |
| <i>P. parvus</i> , n. s., M. & W., 1860.....                                          | 450-451 |
| <i>P. scitulus</i> , n. s., M. & W., 1860.....                                        | 451     |
| <i>Rhynchonella</i> , Fischer.....                                                    | 451     |
| <i>R. subtrigona</i> , n. s., M. & W., 1860.....                                      | 451     |
| <i>Athyris</i> , McCoy.....                                                           | 451     |
| <i>A. parvirostra</i> , n. s., M. & W., 1860.....                                     | 451-452 |
| <i>Conchifera</i> .....                                                               | 452     |
| <i>Pecten</i> , Linnaeus.....                                                         | 452     |
| <i>P. tenuilineatus</i> , n. s., M. & W., 1860.....                                   | 452     |
| <i>Aviculopecten</i> , McCoy.....                                                     | 452     |
| <i>A. oweni</i> , n. s., M. & W., 1860.....                                           | 452-453 |
| <i>A. coxanus</i> , n. s., M. & W., 1860.....                                         | 453     |
| <i>A. burlingtonensis</i> , n. s., M. & W., 1860.....                                 | 453     |
| <i>A. koninckii</i> , n. s., M. & W., 1860.....                                       | 453-454 |
| <i>A. interlineatus</i> , n. s., M. & W., 1860.....                                   | 454     |
| <i>A. amplius</i> , n. s., M. & W., 1860.....                                         | 454-455 |
| <i>A. pellucidus</i> , n. s., M. & W., 1860.....                                      | 455     |
| <i>Avicula</i> , Klein.....                                                           | 455     |
| <i>A. oblonga</i> , n. s., M. & W., 1860.....                                         | 455     |
| <i>Myalina</i> , Koninek.....                                                         | 455     |
| <i>M. angulata</i> , n. s., M. & W., 1860.....                                        | 455-456 |
| <i>M. concentrica</i> , n. s., M. & W., 1860.....                                     | 456     |
| <i>M. recurvirostra</i> , n. s., M. & W., 1860.....                                   | 456     |
| <i>Solemya</i> , Lamarck.....                                                         | 457     |
| <i>S. radiata</i> , n. s., M. & W., 1860.....                                         | 457     |
| <i>Leda</i> , Schumaker.....                                                          | 457     |
| <i>L. (Foldia?) levistriata</i> , n. s., M. & W., 1860.....                           | 457     |
| <i>Schizodus</i> , King.....                                                          | 457     |
| <i>S. chesterensis</i> , n. s., M. & W., 1860.....                                    | 457     |
| <i>Cardiomorpha</i> , Koninek.....                                                    | 458     |
| <i>C. radiata</i> , n. s., M. & W., 1860.....                                         | 458     |
| <i>Gasteropoda</i> .....                                                              | 458     |
| <i>Bellerophon</i> , Montfort.....                                                    | 458     |
| <i>B. crassus</i> , n. s., M. & W., 1860.....                                         | 458     |
| <i>Pleurotomaria</i> , DeFrance.....                                                  | 458     |
| <i>P. subconstricta</i> , n. s., M. & W., 1860.....                                   | 458-459 |
| <i>P. granulostriata</i> , n. s., M. & W., 1860.....                                  | 459     |
| <i>P. tenuicincta</i> , n. s., M. & W., 1860.....                                     | 459     |

\* Σφην, a wedge; ποτηριον, a cup.

|                                                                    | Page.   |
|--------------------------------------------------------------------|---------|
| <i>P. prattensis</i> , n. s., M. & W., 1860.....                   | 459-460 |
| <i>P. subinnuata</i> , n. s., M. & W., 1860.....                   | 460     |
| <i>P. chesterensis</i> , n. s., M. & W., 1860.....                 | 460     |
| <i>P. subscalaris</i> , n. s., M. & W., 1860.....                  | 460-461 |
| <i>P. speciosa</i> , n. s., M. & W., 1860.....                     | 461     |
| <i>P. turbiniformis</i> , n. s., M. & W., 1860.....                | 461     |
| <i>P. scitula</i> , n. s., M. & W., 1860.....                      | 461-462 |
| <i>P. shumardi</i> , n. s., M. & W., 1860.....                     | 462     |
| <i>Straparollus</i> , Montfort? = <i>Euomphalus</i> , Sowerby..... | 462     |
| <i>Euomphalus planodorsatus</i> , n. s., M. & W., 1860.....        | 462     |
| <i>E. umbilicatus</i> , n. s., M. & W., 1860.....                  | 462-463 |
| <i>Naticopsis</i> , McCoy.....                                     | 463     |
| <i>N. nodosus</i> , n. s., M. & W., 1860.....                      | 463     |
| <i>N. hollidayi</i> , n. s., M. & W., 1860.....                    | 463     |
| <i>Platystoma</i> , Conrad.....                                    | 463     |
| <i>P. nana</i> , n. s., M. & W., 1860.....                         | 463     |
| <i>P. ? tumida</i> , n. s., M. & W., 1860.....                     | 463-464 |
| <i>Eunema</i> , Salter.....                                        | 464     |
| <i>E. ? salteri</i> , n. s., M. & W., 1860.....                    | 464     |
| <i>Lozonema</i> , Phillips.....                                    | 464     |
| <i>L. scitula</i> , n. s., M. & W., 1860.....                      | 464-465 |
| <i>L. rugosa</i> , n. s., M. & W., 1860.....                       | 465     |
| <i>L. cerithiformis</i> , n. s., M. & W., 1860.....                | 465     |
| <i>L. inornata</i> , n. s., M. & W., 1860.....                     | 465     |
| <i>L. nitidula</i> , n. s., M. & W., 1860.....                     | 465-466 |
| <i>Eulima</i> , Risso.....                                         | 466     |
| <i>E. ? peracuta</i> , n. s., M. & W., 1860.....                   | 466     |
| <i>Macrocheilus</i> , Phillips.....                                | 466     |
| <i>M. medialis</i> , n. s., M. & W., 1860.....                     | 466-467 |
| <i>M. intercalaris</i> , n. s., M. & W., 1860.....                 | 467     |
| <i>M. pulchellus</i> , n. s., M. & W., 1860.....                   | 467     |
| <i>Soleniscus</i> , n. g., M. & W., 1860.....                      | 467     |
| <i>S. typicus</i> , n. s., M. & W., 1860.....                      | 467-468 |
| <i>Cephalopoda</i> .....                                           | 468     |
| <i>Orthoceras</i> , Breynius.....                                  | 468     |
| <i>O. expansum</i> , n. s., M. & W., 1860.....                     | 468     |
| <i>Cyrtoceras</i> , Goldfuss.....                                  | 468     |
| <i>C. curtum</i> , n. s., M. & W., 1860.....                       | 468     |
| <i>C. ? dilatatum</i> , n. s., M. & W., 1860.....                  | 468-469 |
| <i>Nautilus</i> , Breynius.....                                    | 469     |
| <i>N. subglobosus</i> , n. s., M. & W., 1860.....                  | 469     |
| <i>N. chesterensis</i> , n. s., M. & W., 1860.....                 | 469     |
| <i>N. spectabilis</i> , n. s., M. & W., 1860.....                  | 469     |
| <i>N. (Discus) planorbiformis</i> , n. s., M. & W., 1860.....      | 469-470 |
| <i>N. (Discus) trisulcatus</i> , n. s., M. & W., 1860.....         | 470     |
| <i>N. (Discus) digonus</i> , n. s., M. & W., 1860.....             | 470     |
| <i>N. (Discus) sangamonensis</i> , n. s., M. & W., 1860.....       | 470-471 |
| <i>Goniatites</i> , De Haan.....                                   | 471     |
| <i>G. globulosus</i> , n. s., M. & W., 1860.....                   | 471     |
| <i>G. iowensis</i> , n. s., M. & W., 1860.....                     | 471     |
| <i>G. lyoni</i> , n. s., M. & W., 1860.....                        | 471-472 |
| Subgenus <i>Oligoporus</i> ,* n. s. g., M. & W., 1860.....         | 472     |

## 21.

MEEK, F. B., and WORTHEN, A. H. Remarks on the age of the Goniatite limestone at Rockford, Indiana, and its relation to the "Black Slate" of the western States, and to some of the succeeding rocks above the latter. <Am. Journ. Sci., vol. xxxii, 2d ser., pp. 167-177. 1861. New Haven, 1861.

The authors conclude it to be probably of Carboniferous age, and, at any rate, much more recent than the Chemung, and not equivalent to any New York rock.

\* ὀλίγος, few; and πόνος, opening a pore.



MEEK, F. B., and WORTHEN, A. H. Descriptions of new Paleozoic fossils from Illinois and Iowa. <Proc. Acad. Nat. Sci. Phila., vol. xiii, pp. 128-148. 1861. Philadelphia. 1862.

Genera *Bursacrinus*, *Cardiopsis*, *Orthonema*. Afterward republished in the Illinois Geological Reports, vol. ii.

|                                                                           | Page    |
|---------------------------------------------------------------------------|---------|
| <i>Echinodermata:</i>                                                     |         |
| <i>Orinoidea:</i>                                                         |         |
| <i>Platycrinus</i> , Miller, 1821.....                                    |         |
| <i>P. oweni</i> , n. s., M. & W., 1861.....                               | 128-129 |
| <i>P. scobina</i> , n. s., M. & W., 1861.....                             | 129     |
| <i>P. (Pleurocrinus) asper</i> , n. s., M. & W., 1861.....                | 129-130 |
| <i>Forbesiocrinus</i> , Koninck & Le Hon.....                             | 130     |
| <i>P. monroensis</i> , n. s., M. & W., 1861.....                          | 130-131 |
| <i>P. agassizi</i> var. <i>giganteus</i> , n. s., M. & W., 1861.....      | 131     |
| <i>Actinocrinus</i> , Miller, 1821.....                                   | 131     |
| <i>A. dodecadactylus</i> , n. s., M. & W., 1861.....                      | 131     |
| <i>A. pyriformis</i> var. <i>rudis</i> , M. & W., 1861.....               | 131-132 |
| <i>A. (Amphoracrinus?) concavus</i> , n. s., M. & W., 1861.....           | 132-133 |
| <i>A. (Pradocrinus?) amplus</i> , n. s., M. & W., 1861.....               | 133-134 |
| <i>A. sillimani</i> , n. s., M. & W., 1861.....                           | 134-135 |
| <i>Agariocrinus</i> , Troost.....                                         | 135     |
| <i>A. gracilis</i> , n. s., M. & W., 1861.....                            | 135     |
| <i>Platycrinus multi-branchiatus</i> , n. s., M. & W., 1861.....          | 135-136 |
| <i>Cyathocrinus</i> , Miller, 1821.....                                   | 136     |
| <i>C. wachsmuthi</i> , n. s., M. & W., 1861.....                          | 136     |
| <i>Bursacrinus</i> , n. g., M. & W., 1861.....                            | 136     |
| <i>B. wachsmuthi</i> , n. s., M. & W., 1861.....                          | 137     |
| <i>Poteriocrinus</i> , Miller, 1821.....                                  | 137     |
| <i>P. ? enormis</i> , n. s., M. & W., 1861.....                           | 137-138 |
| <i>P. sub-impressus</i> , n. s., M. & W., 1861.....                       | 138     |
| <i>P. tenuibrachiatus</i> , n. s., M. & W., 1861.....                     | 138-139 |
| <i>P. carinatus</i> , n. s., M. & W., 1861.....                           | 139-140 |
| Subgenus <i>Scaphiocrinus</i> , Hall, 1858.....                           | 140     |
| <i>P. (Scaphiocrinus?) carbonarius</i> , n. s., M. & W., 1861.....        | 140     |
| <i>P. (Scaphiocrinus) solidus</i> , n. s., M. & W., 1861.....             | 140-141 |
| <i>P. (Scaphiocrinus) wachsmuthi</i> , n. s., M. & W., 1861.....          | 141     |
| <i>Blastoidea:</i>                                                        |         |
| <i>Pentremites</i> , Say, 1820.....                                       | 141     |
| <i>P. cornutus</i> , n. s., M. & W., 1861.....                            | 141-142 |
| <i>P. melo</i> var. <i>projectus</i> , n. s., M. & W., 1861.....          | 142     |
| <i>Asterocidea:</i>                                                       |         |
| <i>Petraster</i> , Billings, 1858.....                                    | 142     |
| <i>P. wilberanus</i> , n. s., M. & W., 1861.....                          | 142     |
| <i>Mollusca:</i>                                                          |         |
| <i>Brachiopoda:</i>                                                       |         |
| <i>Productus</i> , Sowerby, 1812.....                                     | 142     |
| <i>P. magnus</i> , n. s., M. & W., 1861.....                              | 142-143 |
| <i>Spirifera glabra</i> var. <i>contracta</i> , n. s., M. & W., 1861..... | 143-144 |
| <i>Lamellibranchiata:</i>                                                 |         |
| * <i>Cardiopsis</i> , n. g., M. & W., 1861.....                           | 144     |
| <i>Leda</i> , Schumacher, 1817.....                                       | 144     |
| <i>L. curta</i> , n. s., M. & W., 1861.....                               | 144-145 |
| <i>Gastropoda:</i>                                                        |         |
| <i>Dentalium</i> , Lin., 1740.....                                        | 145     |
| <i>D. venustum</i> , n. s., M. & W., 1861.....                            | 145     |
| <i>Straparollus</i> , Montfort, 1810.....                                 | 145     |
| <i>S. similis</i> , n. s., M. & W., 1861.....                             | 145-146 |
| <i>S. similis</i> var. <i>planus</i> , M. & W., 1861.....                 | 146     |

\* *Cardium* and *oφes*, from its resemblance to *Cardium*.

|                                                                | Page.   |
|----------------------------------------------------------------|---------|
| <i>Orthonema</i> , n. g., M. & W., 1861.....                   | 146     |
| <i>Loxonema</i> , Phillips, 1841.....                          | 146     |
| <i>L. multicostata</i> , n. s., M. & W., 1861.....             | 146-147 |
| <i>Cephalopoda</i> :                                           |         |
| <i>Orthoceras</i> , Breynius, 1732.....                        | 147     |
| <i>O. annulocostatum</i> , n. s., M. & W., 1861.....           | 147     |
| <i>Nautilus</i> , Breynius, 1732.....                          | 147     |
| † Subgenus <i>Trematodiscus</i> , n. s. g., M. & W., 1861..... | 147     |

Corrections in regard to a few fossils described in papers of September and October, 1860.

- Cyathocrinus scitulus* (September, 1860) should be *C. sculptilis*.  
*Platystoma nana* (October, 1860) should be *Naticopsis*.  
*Eulina peracuta* (October, 1860) should be ranged under *Polyphemopsis*, of Portlock, probably a section of the genus *Loxonema*.  
*Orthoceras expansum* (October, 1860) belongs to the genus or subgenus *Actinoceras*.  
*Cyrtoceras curtum* (October, 1860) should be ranged under the subgenus *Aploceras*.

### 23.

MEEK, F. B. Descriptions of new Cretaceous fossils collected by the Northwestern Boundary Commission on Vancouver and Sucia Islands. <Proc. Acad. Nat. Sci. Phila., vol. xiii, pp. 314-318. 1861. Philadelphia, 1862.

| <i>Lamellibranchiata</i> :                                                 | Page.   |
|----------------------------------------------------------------------------|---------|
| <i>Inoceramus subundatus</i> , Meek, n. s., 1861.....                      | 315     |
| <i>Dosinia</i> ? <i>tenuis</i> , n. s., Meek, 1861.....                    | 315     |
| <i>Mactra gibbosa</i> , n. s., Meek, 1861.....                             | 315-316 |
| <i>Cephalopoda</i> :                                                       |         |
| <i>Baculites inornatus</i> , n. s., Meek, 1861.....                        | 316     |
| <i>Baculites occidentalis</i> , n. s., Meek, 1861.....                     | 316-317 |
| <i>Ammonites complexus</i> var. <i>suciaensis</i> , n. s., Meek, 1861..... | 317     |
| <i>Ammonites vancouverensis</i> , n. s., Meek, 1861.....                   | 317-318 |
| <i>Nautilus campbelli</i> , n. s., Meek, 1861.....                         | 318     |

### 24.

MEEK, F. B., and HAYDEN, F. V. Descriptions of new Lower Silurian (Primordial), Jurassic, Cretaceous, and Tertiary fossils, collected in Nebraska by the exploring expedition under the command of Capt. Wm. F. Reynolds, U. S. Top. Engrs., with some remarks on the rocks from which they were obtained. <Proc. Acad. Nat. Sci. Phila., vol. xiii, pp. 415-447. 1861. Philadelphia, 1862.

|                                                                                 | Page.   |
|---------------------------------------------------------------------------------|---------|
| Lower Silurian (Primordial) rocks.....                                          | 415-416 |
| Jurassic rocks.....                                                             | 416-417 |
| Cretaceous rocks.....                                                           | 417-432 |
| Lower series.....                                                               | 417-424 |
| General section of the Cretaceous rocks of Nebraska.....                        | 419     |
| Upper Cretaceous series of Nebraska.....                                        | 424-432 |
| New Jersey section, compiled from the reports of that State.....                | 426     |
| Fox Hill beds.....                                                              | 427     |
| Relations of the upper Cretaceous series of Nebraska to European divisions..... | 428-432 |
| Tertiary rocks.....                                                             | 432-435 |
| General section of the Tertiary rocks of Nebraska.....                          | 433     |

#### SILURIAN (PRIMORDIAL) FOSSILS.

| <i>Brachiopoda</i> :                       |         |
|--------------------------------------------|---------|
| <i>Obolella</i> , Billings.....            | 435     |
| <i>O. nana</i> , n. s., M. & H., 1861..... | 435-436 |

† *σφθος*, straight; *νήμα*, thread.

[ *τρήμα* and *δίσκος*, in allusion to the perforated umbilicus and the discoid form of the shell in the typical species.



|                                                                                             | Page.   |
|---------------------------------------------------------------------------------------------|---------|
| <i>Pteropoda</i> ? .....                                                                    | 436     |
| <i>Theca</i> , Morris .....                                                                 | 436     |
| <i>Theca</i> ( <i>Pugilunculus</i> ) <i>gregarea</i> , n. s., M. & H., 1861 .....           | 436     |
| <i>Trilobites</i> .....                                                                     | 436     |
| <i>Arionellus</i> , Barrande .....                                                          | 436     |
| <i>A. (Crepicephalus) oweni</i> , n. s., M. & H., 1861 .....                                | 436-437 |
| JURASSIC FOSSILS.                                                                           |         |
| <i>Lamellibranchiata</i> .....                                                              | 437     |
| <i>Gryphaea</i> , Lamarck .....                                                             | 437     |
| <i>G. salicola</i> var. <i>nebrascensis</i> , M. & H., 1861 .....                           | 437-439 |
| <i>Modiola</i> , Lamarck .....                                                              | 439     |
| <i>M. (Perna) formosa</i> , n. s., M. & H., 1861 .....                                      | 439     |
| CRETACEOUS FOSSILS.                                                                         |         |
| <i>Lamellibranchiata</i> .....                                                              | 440     |
| <i>Ostrea</i> , Linnaeus .....                                                              | 440     |
| <i>O. gabbana</i> , n. s., M. & H., 1861 .....                                              | 440     |
| <i>Leda</i> , Schumacher .....                                                              | 440     |
| <i>L. bisulcata</i> , n. s., M. & H., 1861 .....                                            | 440     |
| <i>Gervillia</i> , DeFrance .....                                                           | 441     |
| <i>G. recta</i> , n. s., M. & H., 1861 .....                                                | 441     |
| <i>Orenella</i> , Brown .....                                                               | 441     |
| <i>O. elegantula</i> , n. s., M. & H., 1861 .....                                           | 441-442 |
| <i>Cardium</i> , Linnaeus .....                                                             | 442     |
| <i>C. (Hemicardium) curtum</i> , n. s., M. & H., 1861 .....                                 | 442     |
| <i>C. pertense</i> , n. s., M. & H., 1861 .....                                             | 442     |
| <i>Callista</i> , Poli .....                                                                | 443     |
| <i>C. deweyi</i> , M. & H., 1856 .....                                                      | 443     |
| <i>Tellina</i> , Linnaeus .....                                                             | 443     |
| <i>T. nitidula</i> , n. s., M. & H., 1861 .....                                             | 443     |
| <i>Lingula</i> , Bruguiere .....                                                            | 443     |
| <i>L. nitida</i> , n. s., M. & H., 1861 .....                                               | 443-444 |
| <i>Gasteropoda</i> .....                                                                    | 444     |
| <i>Neritella</i> , Humphrey .....                                                           | 444     |
| <i>N. nebrascensis</i> , n. s., M. & H., 1861 .....                                         | 444     |
| <i>Melania</i> , Lamarck .....                                                              | 444     |
| <i>M. (Potodoma) veterna</i> , n. s., M. & H., 1861 .....                                   | 444-445 |
| <i>Cephalopoda</i> .....                                                                    | 445     |
| <i>Baculites</i> , Lamarck .....                                                            | 445     |
| <i>B. baculus</i> , n. s., M. & H., 1861 .....                                              | 445     |
| TERTIARY FOSSILS.                                                                           |         |
| <i>Gasteropoda</i> .....                                                                    | 446     |
| <i>Vivipara</i> , Lamarck .....                                                             | 446     |
| <i>V. raynoldsana</i> , n. s., M. & H., 1861 .....                                          | 446     |
| <i>Helix</i> , Linnaeus .....                                                               | 446     |
| <i>H. spatiosa</i> , n. s., M. & H., 1861 .....                                             | 446-447 |
| <i>H. veterna</i> , n. s., M. & H., 1861 .....                                              | 447     |
| Correction, notes the omission of the name <i>Arcadæ</i> on p. 428 of the Proc. for 1860 .. | 447     |

## 25.

MEEK, F. B., and HAYDEN, F. V. Descriptions of new Cretaceous fossils from Nebraska Territory, collected by the expedition sent out by the Government under the command of Lieut. John Mullan, U. S. Topographical Engineers, for the location of a wagon road from the sources of the Missouri to the Pacific Ocean. <Proc. Acad. Nat. Sci. Phila., vol. xiv, pp. 21-28. 1862. Philadelphia, 1863.

*Cephalopoda* :

|                                                    | Page. |
|----------------------------------------------------|-------|
| <i>Scaphites</i> , Parkinson .....                 | 22    |
| <i>S. ventricosus</i> , n. s., M. & H., 1862 ..... | 22    |
| <i>S. vermiformis</i> , n. s., M. & H., 1862 ..... | 22-23 |
| <i>Ammonites</i> , Bruguiere .....                 | 23    |

|                                                                           | Page. |
|---------------------------------------------------------------------------|-------|
| <i>A. mullanus</i> , n. s., M. & H., 1862.....                            | 23-25 |
| <i>Nautilus</i> , Breynius.....                                           | 25    |
| <i>N. elegans</i> , Sowerby var. <i>nebrascensis</i> , M. & H., 1862..... | 25    |

*Lamellibranchiata:*

|                                                      |       |
|------------------------------------------------------|-------|
| <i>Inoceramus</i> , Sowerby.....                     | 26    |
| <i>I. undabundus</i> , n. s., M. & H., 1862.....     | 26    |
| <i>I. exogyroides</i> , n. s., M. & H., 1862.....    | 26-27 |
| <i>I. tenuirostratus</i> , n. s., M. & H., 1862..... | 27    |
| <i>Venilia</i> , Morton.....                         | 27    |
| <i>V. mortoni</i> , n. s., M. & H., 1862.....        | 27-28 |
| <i>Pholadomya</i> , Sowerby.....                     | 28    |
| <i>P. papyracea</i> , n. s., M. & H., 1862.....      | 28    |

26.

MEEK, F. B. Remarks on the family Actæonidæ, with descriptions of some new genera and subgenera. <Am. Journ. Sci., vol. xxxv, 2d ser., pp. 84-94. 1863. New Haven, 1863.

|                                                                               | Page. |
|-------------------------------------------------------------------------------|-------|
| <i>Actæonina</i> :                                                            |       |
| <i>Actæonella</i> , d'Orbigny (as restricted).....                            | 89    |
| <i>Trochactæon</i> , Meek, 1863 ( <i>Actæonella</i> (part) d'Orb.).....       | 89-90 |
| Subgenus <i>Spiractæon</i> Meek, 1863.....                                    | 90    |
| <i>Cylindrites</i> (Anct.) Morris & Lycett (as restricted).....               | 90-91 |
| Subgenus <i>Gonicylindrites</i> .....                                         | 91    |
| <i>Actæonina</i> , d'Orbigny (as restricted).....                             | 91    |
| Subgenus <i>Trochactæonina</i> Meek, 1863.....                                | 91    |
| <i>Euconactæon</i> , Meek, 1863 ( <i>Actæonina</i> (part) d'Orb. & Alt.)..... | 91-92 |
| Subgenus! <i>Conactæon</i> , Meek.....                                        | 92    |
| <i>Ringiculina</i> :                                                          |       |
| <i>Cinulia</i> , Gray.....                                                    | 92    |
| Subgenus <i>Avellana</i> , d'Orbigny.....                                     | 92    |
| Subgenus <i>Euptycha</i> , Meek, 1863.....                                    | 93    |
| <i>Aptycha</i> , Meek, 1863.....                                              | 93-94 |

27.

MEEK, F. B. Remarks on the family Pterriidæ (= Aviculidæ), with descriptions of some new fossil genera. <Am. Journ. Sci., vol. xxxvii, 2d ser., pp. 212-220. 1864. New Haven, 1864.

|                                                                | Page.   |
|----------------------------------------------------------------|---------|
| <i>Pteriidæ</i> (or <i>Aviculidæ</i> ).....                    | 214-215 |
| <i>Pterinina</i> (or <i>Pterinia</i> group).....               | 215     |
| <i>Pterina</i> (or <i>Aviculina</i> ).....                     | 215     |
| <i>Melinina</i> ( <i>Perna</i> or <i>Isognomen</i> group)..... | 215     |
| <i>Gryphorhynchus</i> , n. g., Meek, 1864.....                 | 217-218 |
| <i>Eumicrotis</i> , n. g., Meek, 1864.....                     | 218-220 |

28.

MEEK, F. B. Carboniferous and Jurassic fossils. <Paleontology of California (Whitney), vol. i, pp. 1-16, 2 plates, and pp. 39-53, pls. vii and viii. 1864. Published by authority of the legislature of California, 1844.

DESCRIPTION OF CARBONIFEROUS FOSSILS.

|                                                                       | Page. |
|-----------------------------------------------------------------------|-------|
| <i>Foraminifera</i> :                                                 |       |
| <i>Fusulina</i> , Fischer.....                                        | 3     |
| <i>F. robusta</i> , n. s., Meek, 1864, pl. ii, figs. 3 and 3 a-c..... | 3-4   |
| <i>F. gracilis</i> , n. s., Meek, 1864, pl. ii, fig. 1 and 1 a-c..... | 4     |
| <i>F. cylindrica</i> , Fischer †, 1837, pl. ii, figs. 2 and 2 a.....  | 4     |



## Zoophyta.

- Lithostrotion*, Fleming .....  
*L. mamillare* (?), Castlenau (sp.), 1843, pl. i, figs. 4 and 4 a, b .....  
*L. ? californiense*, n. s., Meek, 1864, pl. i, figs. 2 and 2 a-c .....  
*Lithostrotion* —, Meek, 1864, pl. i, figs. 3 and 3 a .....  
*Clisiophyllum*, Dana .....  
*C. gabbi*, n. s., Meek, 1864, pl. i, fig. 1 and 1 a, b .....

## Mollusca.

## Brachiopoda

- Orthis*, Dalman .....  
*Orthis*, sp. undt., 1864, pl. ii, figs. 5 and 5 a-c .....  
*Productus*, Sowerby .....  
*P. semireticulatus*, Martin (sp.), 1809, pl. ii, figs. 4 and 4 a .....  
*Rhynchonella*, Fischer .....  
*Rhynchonella*, sp. undt., 1864 .....  
*Spirifer*, Sowerby .....  
Subgenus *Martinia*, McCoy .....  
*S. (Martinia) lineatus*, Martin ? (sp.), 1809, pl. ii, figs. 6 and 6 a-d .....  
*Spiriferina*, Davidson .....  
*Spiriferina*, sp. undt., 1864 .....  
*Retzia*, King .....  
*R. compressa*, n. s., Meek, 1864, pl. ii, figs. 7 and 7 a-c .....

## Gastropoda

- Euomphalus*, Sowerby = *Straparollus*, Montfort ? .....  
Subgenus *Omphalotrochus*, Meek .....  
*E. (Omphalotrochus) whitneyi*, n. s., Meek, 1864, pl. ii, figs. 8 and 8 a .....

## DESCRIPTION OF THE JURASSIC FOSSILS.

## Brachiopoda

- Rhynchonellidae* .....  
*Rhynchonella*, Fischer, 1809 .....  
*R. gnathophora*, n. s., Meek, 1864, pl. viii, fig. 1 and 1 a-f .....  
*Terebratulidae* .....  
*Terebratula*, Müller, 1776 .....  
*Terebratula* —, 1864, pl. viii, figs. 2 and 2 a, b .....

## Lamellibranchiata

- Ostreidae* .....  
*Gryphaea*, Lamarck, 1801 .....  
*Gryphaea* —, 1864, pl. viii, figs. 4 and 4 a .....

## Limidae

- Lima*, Bruguière, 1792 .....  
*L. ? sinuata*, n. s., Meek, 1864, pl. vii, figs. 4 and 4 a .....  
*L. recticostata*, n. s., Meek, 1864, pl. vii, fig. 5 .....  
*L. ? cuneata*, n. s., Meek, 1864, pl. vii, figs. 6 and 6 a .....

## Pectenidae

- Pecten*, Müller, 1776 .....  
*P. acutiplicatus*, n. s., Meek, 1864, pl. viii, fig. 3 .....

## Pteriidae

- Inoceramus*, Sowerby, 1814 .....  
*I. ? obliquus*, n. s., Meek, 1864, pl. vii, figs. 2 and 2 a .....  
*I. ? rectangulus*, n. s., Meek, 1864, pl. vii, figs. 1 and 1 a .....

## Trigoniidae

- Trigonia*, Bruguière, 1789 .....  
*T. pandicosta*, n. s., Meek, 1864, pl. viii, fig. 7 .....

## Mytilidae

- Mytilus*, Linnæus, 1758 .....  
*M. multistriatus*, n. s., Meek, 1864, pl. vii, figs. 7 and 7 a .....

## Crassatellidae

- Astarte*, Sowerby, 1816 .....  
*A. ventricosa*, n. s., Meek, 1864, pl. viii, figs. 5 and 5 a .....

## Lucinidae

- Unicardium*, d'Orbigny, 1852 .....  
*U. ? gibbosum*, n. s., Meek, 1864, pl. viii, figs. 8 and 8 a .....

## Anatinida

|                                                                          | Page. |
|--------------------------------------------------------------------------|-------|
| <i>Myacites</i> (Schlot.), Munster, 1840 .....                           | 51    |
| <i>M. depressus</i> , n. s., Meek, 1864, pl. viii, figs. 6 and 6 a ..... | 51-52 |
| <i>Cephalopoda</i> .....                                                 | 53    |
| <i>Belemnitidae</i> .....                                                | 53    |
| <i>Belemnites</i> , Auct. ....                                           | 53    |
| <i>Belemnites</i> , —, 1864, pl. viii, figs. 9 and 9 a .....             | 53    |

29.

MEEK, F. B., and HAYDEN, F. V. Paleontology of the Upper Missouri. < Smithsonian contributions to knowledge (172), pp. 1-135, pls. i-v. 1864. Washington, 1865.

Primordial, Carboniferous, Permian, and Jurassic. Genera *Camptonectes*, *Lioplacodes*, *Eumicrotia*, *Chœnomys*. This work contains descriptions of new fresh-water Jurassic species, the first of that age discovered in North America. The work has additional importance in consequence of the philosophical discussion of important questions.

|                    | Page.  |
|--------------------|--------|
| Introduction ..... | VII-IX |

SILURIAN AGE. (POTSDAM OR PRIMORDIAL PERIOD.)

*Mollusca.*

*Brachiopoda.*

|                                                                 |     |
|-----------------------------------------------------------------|-----|
| <i>Lingulidae</i> .....                                         | 1   |
| <i>Lingulepis</i> , Hall, 1863 .....                            | 1-2 |
| <i>L. pinniformis</i> , Owen, 1852, pl. i, figs. 1 a, b .....   | 2-3 |
| <i>L. prima</i> (Conrad), Hall, 1847, pl. i, figs. 2 a, b ..... | 3   |
| <i>Obolella</i> , Billings, 1861 .....                          | 3-4 |
| <i>O. nana</i> , M. & H., 1861, pl. i, figs. 3 a-d .....        | 4   |

*Gasteropoda.*

*Pteropoda.*

*Thecosomata.*

|                                                           |     |
|-----------------------------------------------------------|-----|
| <i>Cavolinidae</i> .....                                  | 4-5 |
| <i>Theca</i> , Sowerby, 1845 .....                        | 5   |
| <i>T. gregaria</i> , M. & H., 1861, figs. a-d, p. 5 ..... | 5-6 |

*Articulata.*

*Crustacea.*

*Trilobita.*

|                                                         |      |
|---------------------------------------------------------|------|
| <i>Paradoxidae</i> .....                                | 7    |
| <i>Agraulos</i> , Corda, 1847 .....                     | 7-9  |
| <i>A. oiceni</i> , M. & H., 1861, figs. a-c, p. 9 ..... | 9-10 |
| <i>Agraulos</i> — ? pl. i, fig. 4 .....                 | 10   |

CARBONIFEROUS AGE. (CARBONIFEROUS PERIOD.)

*Protozoa.*

*Rhizopoda.*

*Foraminifera.*

|                                                                |       |
|----------------------------------------------------------------|-------|
| <i>Camerinidae</i> .....                                       | 11-13 |
| <i>Fusulina</i> , Fischer, 1837 .....                          | 13-14 |
| <i>F. cylindrica</i> , Fischer, 1837, pl. i, figs. 6 a-i ..... | 14-15 |

*Mollusca.*

*Brachiopoda.*

|                                                                           |       |
|---------------------------------------------------------------------------|-------|
| <i>Spiriferidae</i> .....                                                 | 16    |
| <i>Spirifer</i> , Sowerby, 1815 .....                                     | 17-20 |
| <i>Trigonotreta</i> , Koenig, = <i>Spirifer</i> of most authors .....     | 19    |
| <i>Martinia</i> , McCoy, = <i>Ambocelia</i> , Hall .....                  | 19    |
| <i>S. (Martinia) plano-convexus</i> Shumard, 1856, figs. a-e, p. 21 ..... | 20-21 |
| <i>Productidae</i> .....                                                  | 21-22 |
| <i>Chonetes</i> , Fischer, 1837 .....                                     | 22    |
| <i>C. mucronata</i> , M. & H., 1858, pl. i, fig. 5, a-e .....             | 22-23 |
| <i>Strophomenidae</i> .....                                               | 23    |
| <i>Hemipronites</i> , Pander, 1830 .....                                  | 24-26 |
| <i>H. crassus</i> , M. & H., 1858, pl. i, fig. 7 a-d .....                | 26-27 |



|                                                                   | Page                                 |
|-------------------------------------------------------------------|--------------------------------------|
| <i>Lamellibranchiata.</i>                                         |                                      |
| <i>Pteriidae</i> (= <i>Aviculidae</i> )                           | 27-30                                |
| <i>Pterinitinae</i> (or <i>Pterinia</i> group)                    | 28                                   |
| <i>Pterinae</i> (or <i>Aviculinae</i> )                           | 28                                   |
| <i>Melininae</i> ( <i>Perna</i> or <i>Isognomon</i> group)        | 28                                   |
| <i>Pterinitinae</i>                                               | 30                                   |
| <i>Myalina</i> , Koninck, 1842                                    | 30-32                                |
| Shell structure of <i>Myalina angulata</i> , fig. —               | 31                                   |
| <i>M. perattenuata</i> , M. & H., 1858, pl. i, figs. 12 a, b.     | 32                                   |
| <i>M. subquadrata</i> , Shumard, figs. a, b, p. 33.               | 32-33                                |
| <i>Crassatellidae</i>                                             | 34                                   |
| <i>Pleurophorus</i> , King, 1844                                  | 34-35                                |
| Subgenus <i>Oleidophorus</i> , Hall, 1847                         | 35                                   |
| <i>P. occidentalis</i> , M. & H., pl. i, figs. 11 a, b            | 35                                   |
| <i>Anatinidae</i>                                                 | 36                                   |
| <i>Allorisma</i> , King, 1844                                     | 36-37                                |
| <i>A. subcuneata</i> , M. & H., 1858, pl. i, figs. 10 a, b        | 37-38                                |
| <i>Sedgwickia</i> , McCoy, 1844                                   | 38-40                                |
| <i>S. topekaensis</i> ?, Shumard, 1858, figs. a, b, p. 40.        | 40-41                                |
| <i>S.?</i> <i>concava</i> , M. & H., 1858, pl. i, figs. 8 a, b    | 41                                   |
| <i>S.?</i> <i>altirostrata</i> , M. & H., 1858, pl. i, fig. 9.    | 41-42                                |
| * <i>Chænomys</i> , n. g., Meek, 1865                             | 42-43                                |
| <i>C. leavenworthensis</i> , M. & H., 1858, pl. ii, figs. 1 a-c   | 43-44                                |
| <i>C. cooperi</i> , M. & H., 1858, pl. ii, figs. 2 a, b           | 44                                   |
| <i>Gastropoda.</i>                                                |                                      |
| <i>Prosobranchiata.</i>                                           |                                      |
| <i>Rhipidoglossata.</i>                                           |                                      |
| <i>Podophthalma.</i>                                              |                                      |
| <i>Pleurotomaridae</i>                                            | 44-45                                |
| <i>Pleurotomaria</i> , DeFrance, 1826                             | 45-46                                |
| <i>P. humerosa</i> , M. & H., 1858, pl. i, figs. 14 a, b          | 46-47                                |
| <i>P. subturbinata</i> , M. & H., 1858, pl. i, fig. 13            | 47                                   |
|                                                                   |                                      |
|                                                                   | CARBONIFEROUS AGE. (PERMIAN PERIOD.) |
| <i>Mollusca.</i>                                                  |                                      |
| <i>Lamellibranchiata.</i>                                         |                                      |
| <i>Pectinidae</i>                                                 | 48                                   |
| <i>Pectininae</i>                                                 | 48                                   |
| <i>Aviculopectininae</i>                                          | 49                                   |
| <i>Aviculopectininos</i>                                          | 49                                   |
| <i>Aviculopecten</i> , McCoy, 1851                                | 49                                   |
| <i>A. amplus</i> , M. & W., fig. —, p. 50                         | 50                                   |
| <i>Aviculopecten</i> , —, pl. ii, fig. 10                         | 50                                   |
| <i>A. macoyi</i> , pl. ii, fig. 9                                 | 50-51                                |
| <i>Pteriidae.</i>                                                 |                                      |
| <i>Pterinitinae</i>                                               | 51                                   |
| <i>Myalina</i> , Koninck, 1842                                    | 51                                   |
| <i>M. aviculoides</i> , M. & H., 1860, pl. ii, figs. 8 a-d        | 51-52                                |
| <i>M. permiana</i> , Swallow, 1858, pl. ii, figs. 7 a-c           | 52                                   |
| <i>Pterinae.</i>                                                  |                                      |
| <i>Eumicrotis</i> , Meek, 1864                                    | 53-54                                |
| <i>E. hawni</i> , M. & H., pl. ii, figs. 5 a-c, and fig. 1, p. 54 | 54-55                                |
| Shell structure of <i>E. curta</i> , No. 2, p. —                  | 54                                   |
| <i>E. hawni</i> var. <i>ovata</i> , pl. ii, figs. 5 a, b          | 55                                   |
| <i>Melininae.</i>                                                 |                                      |
| <i>Bakevella</i> , King, 1848                                     | 57                                   |
| <i>B. parva</i> , M. & H., 1858, pl. ii, figs. 12 a, b            | 57                                   |
| <i>Trigoniidae</i>                                                | 57-58                                |
| <i>Schizodus</i> , King, 1846                                     | 58-59                                |
| <i>S. oratus</i> , M. & H., 1858, pl. ii, figs. 11 a, b           | 59                                   |
| <i>Nuculanidae</i>                                                | 59-60                                |
| <i>Nuculaninae</i>                                                | 60                                   |
| <i>Malletinae</i>                                                 | 60                                   |

\* *Xaïra*, to open or gape; and *mya*.

|                                                                                                             | Page. |
|-------------------------------------------------------------------------------------------------------------|-------|
| <i>Nuculaninae</i> .....                                                                                    | 60    |
| <i>Yoldia</i> , Möller, 1842 .....                                                                          | 60    |
| <i>Y. ? subscitula</i> , M. & H., 1858, pl. ii, figs. 4 a, b.....                                           | 60-61 |
| <i>Orasatellidae</i> .....                                                                                  | 61    |
| <i>Pleurophorus</i> , King, 1844 .....                                                                      | 61    |
| <i>P. ? subcuneatus</i> , M. & H., 1858, pl. ii, fig. 3 .....                                               | 61    |
| <i>P. ? calhouni</i> , M. & H., 1858, pl. ii, figs. 13 a, b .....                                           | 62    |
| <i>Cephalopoda</i> .....                                                                                    |       |
| <i>Tetrabanchiata</i> .....                                                                                 |       |
| <i>Nautilidae</i> .....                                                                                     | 63-64 |
| <i>Nautilus</i> , Linnaeus, 1758 .....                                                                      | 64-65 |
| <i>N. eccentricus</i> , M. & H., pl. ii, figs. 14 a, b .....                                                | 65    |
| REPTILIAN AGE. (JURASSIC PERIOD.)                                                                           |       |
| <i>Radiata</i> .....                                                                                        |       |
| <i>Echinodermata</i> .....                                                                                  |       |
| <i>Orinoidea</i> .....                                                                                      |       |
| <i>Pentacrinidae</i> .....                                                                                  |       |
| <i>Pentacrinites</i> , Miller, 1821 .....                                                                   | 66    |
| <i>Chladorcinus</i> or <i>Cladorcinus</i> [Agassiz] .....                                                   | 66    |
| <i>Pentacrinus asteriscus</i> , M. & H., 1858, pl. iii, figs. 2 a, b and fig. —, p. 67 .....                | 67    |
| <i>Mollusca</i> .....                                                                                       |       |
| <i>Brachiopoda</i> .....                                                                                    |       |
| <i>Lingulidae</i> .....                                                                                     | 68    |
| <i>Lingula</i> , Bruguière, 1792 .....                                                                      | 68-69 |
| <i>L. brevisrostris</i> , M. & H., 1858, pl. iii, figs. 3 a, b .....                                        | 69    |
| <i>Rhynchonellidae</i> .....                                                                                | 70    |
| <i>Rhynchonella</i> , Fischer, 1809 .....                                                                   | 70-71 |
| <i>Rhynchonella</i> , ———, pl. iii, fig. 4.....                                                             | 71-72 |
| <i>Lamellibranchiata</i> .....                                                                              |       |
| <i>Ostreidae</i> .....                                                                                      | 72    |
| <i>Ostrea</i> , Linnaeus, 1758 .....                                                                        | 72-73 |
| <i>O. engelmanni</i> , Meek, 1860, figs. A, B, p. 73 .....                                                  | 73-74 |
| <i>Gryphaea</i> , Lamarck, 1801 .....                                                                       | 74    |
| <i>G. calceola</i> var. <i>nebrascensis</i> , M. & H., 1861, pl. iii, figs. 1 a-e and figs. A-E, p. 75..... | 74-76 |
| <i>Pectinidae</i> .....                                                                                     | 76    |
| <i>Pectininae</i> .....                                                                                     | 76    |
| <i>Camptonectes</i> , Agassiz, 1865 .....                                                                   | 76-77 |
| <i>C. bellistriatus</i> , Meek, 1860, figs. A-D, p. 77 .....                                                | 77-78 |
| <i>C. ? extenuatus</i> , M. & H., 1860, pl. iii, fig. 6.....                                                | 78    |
| <i>Pteridae</i> .....                                                                                       | 79    |
| <i>Pterinea</i> .....                                                                                       | 79    |
| <i>Pteria</i> , Scopoli, 1777 .....                                                                         | 79    |
| Subgenus <i>Oxytoma</i> , n. s. g., Meek, 1865 .....                                                        | 79-80 |
| <i>Pteria</i> ( <i>Oxytoma</i> ) <i>munsteri</i> , Bronn, 1829, figs. A, B, p. 80.....                      | 80-81 |
| <i>Eumicrotis</i> , Meek, 1864 .....                                                                        | 81    |
| <i>E. curta</i> , Hall, 1852, pl. iii, figs. 10 a-d.....                                                    | 81    |
| <i>Trigonidae</i> .....                                                                                     | 82    |
| <i>Trigonia</i> , Bruguière, 1789 .....                                                                     | 82-83 |
| Subdivisions:                                                                                               |       |
| <i>Les Scaphoides</i> , Agassiz. (Jurassic and Cretaceous.)                                                 |       |
| <i>Les Clavelles</i> , Agassiz. (Mainly Jurassic.)                                                          |       |
| <i>Les Carrees</i> , Agassiz. (Upper Jurassic and Cretaceous.)                                              |       |
| <i>Les Scabres</i> , Agassiz. (Mainly Cretaceous.)                                                          |       |
| <i>Les Ondulees</i> , Agassiz. (Jurassic and Cretaceous.)                                                   |       |
| <i>Les Costees</i> , Agassiz. (Jurassic and Cretaceous.)                                                    |       |
| <i>Les Liasces</i> , Agassiz. (Jurassic and Cretaceous.)                                                    |       |
| <i>Les Pectinacees</i> , Agassiz. (Existing seas.)                                                          |       |
| <i>Trigonia conradi</i> , M. & H., 1860, pl. iii, fig. 11.....                                              | 83-84 |
| <i>Mytilidae</i> .....                                                                                      | 84    |
| <i>Volzella</i> , Scopoli, 1777 .....                                                                       | 85-86 |
| <i>V. pertenuis</i> , M. & H., 1858, pl. iii, figs. 5, 5 a.....                                             | 86    |
| <i>V. formosa</i> , M. & H., 1861, figs. A, B, p. 87 .....                                                  | 86-87 |
| <i>Arcidae</i> .....                                                                                        | 87-89 |
| <i>Arcinae</i> .....                                                                                        | 88    |



BULLETIN NO. 30, UNITED STATES NATIONAL MUSEUM.

|                                                                               |        |
|-------------------------------------------------------------------------------|--------|
| <i>Macrodon</i> .....                                                         | Page 9 |
| <i>Azina</i> .....                                                            | 10     |
| <i>Macrodon</i> .....                                                         | 10     |
| <i>Grammatodon</i> , M. & H., 1858.....                                       | 10     |
| <i>G. inornatus</i> , M. & H., 1858, pl. iii, figs. 9 a, 9 b.....             | 10     |
| <i>Unionida</i> .....                                                         | 10-11  |
| <i>Unio</i> , Retzius, 1788.....                                              | 10     |
| <i>U. nucalis</i> , M. & H., 1858, pl. iii, figs. 13 a-c.....                 | 10-11  |
| <i>Crassatellida</i> .....                                                    | 11     |
| <i>Astarte</i> , Sowerby, 1816.....                                           | 11-12  |
| <i>A. fragilis</i> , M. & H., 1860, pl. iv, fig. 7.....                       | 11     |
| <i>A. inornata</i> , M. & H., 1860, pl. iii, figs. 12 a, b.....               | 11     |
| <i>Tancrediida</i> .....                                                      | 12     |
| <i>Tancredia</i> , Lycett, 1850.....                                          | 12-13  |
| <i>T. warrenana</i> , M. & H., 1860, pl. iii, fig. 7.....                     | 12     |
| <i>T. ? equilateralis</i> , M. & H., 1860, pl. iii, fig. 8.....               | 12-13  |
| <i>Cardiida</i> .....                                                         | 13     |
| <i>Protocardia</i> , Beyrich, 1845.....                                       | 13     |
| <i>P. shumardi</i> , M. & H., 1860, figs. A, B on p. 98.....                  | 13-14  |
| <i>Anatiniida</i> .....                                                       | 14     |
| <i>Myacites</i> (Schlot.), Munster, 1840.....                                 | 14-15  |
| <i>M. nebrascensis</i> , M. & H., 1860, pl. iv, fig. 5.....                   | 14-15  |
| <i>M. subellipticus</i> , M. & H., 1858, pl. iv, figs. 6 a-c.....             | 14     |
| <i>Thracia</i> , Leach, 1819.....                                             | 14-15  |
| <i>T. ? sublaris</i> , M. & H., 1860, pl. iv, figs. 4, 4 a.....               | 14     |
| <i>T. ? arcuata</i> , M. & H., 1860, pl. iv, fig. 8.....                      | 14     |
| <i>Pholadomya</i> , Sowerby, 1823.....                                        | 14-15  |
| <br>Section I.—Species without a circumscribed cardinal area.                 |        |
| <i>Multicostrata</i> , Agassiz. (Jurassic and Cretaceous.)                    |        |
| <i>Trigonata</i> , Agassiz. (Cretaceous, Tertiary, and Recent.)               |        |
| <i>Bucardina</i> , Agassiz. (Lias to Tertiary.)                               |        |
| <br>Section II.—Species with a circumscribed cardinal area.                   |        |
| <i>Flabellata</i> , Agassiz. (Jurassic.)                                      |        |
| <i>Orales</i> , Agassiz. (Jurassic.)                                          |        |
| <i>Cardioides</i> , Agassiz. (Jurassic.)                                      |        |
| <i>Pholadomya humilis</i> , M. & H., 1860, pl. iv, figs. 3, a, b.....         | 14     |
| <i>Isotropoda</i> .....                                                       |        |
| <i>Pulmonifera</i> .....                                                      |        |
| <i>Inoperculata</i> .....                                                     |        |
| <i>Limnophila</i> .....                                                       |        |
| <i>Limnæida</i> .....                                                         | 15-16  |
| <i>Limnæina</i> .....                                                         | 15     |
| <i>Physina</i> .....                                                          | 15     |
| <i>Planorbina</i> .....                                                       | 15     |
| <i>Planorbis</i> , Müller, 1774.....                                          | 15     |
| <i>Planorbella</i> , Haldeman.....                                            | 15     |
| <i>Helisoma</i> , Swainson.....                                               | 15     |
| <i>Taphius</i> , H. & A. Adams.....                                           | 15     |
| <i>Menetus</i> , H. & A. Adams.....                                           | 15     |
| <i>Anirus</i> , Fitzinger.....                                                | 15     |
| <i>Bathymorphus</i> , Agassiz (= <i>Spirorbis</i> , Swainson, not Lamk.)..... | 15     |
| <i>Gyraulus</i> , Agassiz (= <i>Nautilina</i> , Stein).....                   | 15     |
| <i>Planorbis velerius</i> , M. & H., 1860, pl. iv, figs. 1 & 1 a, b.....      | 15     |
| <i>rosobranchiata</i> .....                                                   |        |
| <i>Rhipidoglossata</i> .....                                                  |        |
| <i>Podophtalma</i> .....                                                      |        |
| <i>Neritida</i> .....                                                         | 16     |
| <i>Neritella</i> , Humphrey, 1797.....                                        | 16-17  |
| <i>N. nebrascensis</i> , M. & H., 1861, figs. —, on p. 109.....               |        |
| <i>elobranchiata</i> .....                                                    |        |
| <i>Dentaliida</i> .....                                                       |        |
| <i>Dentalium</i> , Lin., 1740.....                                            |        |
| <i>D. subquadratum</i> , Meek, 1860, fig. —, p. 111.....                      |        |
| <i>enobranchiata</i> (= <i>Pectinibranchiata</i> ).                           |        |

|                                                                                                   | Page    |
|---------------------------------------------------------------------------------------------------|---------|
| <i>Rostrifera.</i>                                                                                |         |
| <i>Valvatidae.</i>                                                                                |         |
| <i>Valvata</i> , Müller, 1774 .....                                                               | 112     |
| <i>Valvata</i> (proper) = <i>Gyrorbis</i> , Fitzinger, = <i>Planella</i> , Schlut. ....           | 112     |
| <i>Tropidina</i> , H. & A. Adams .....                                                            | 112-113 |
| Subgenus <i>Tropidina</i> , H. & A. Adams .....                                                   | 113     |
| <i>Valvata</i> ? ( <i>Tropidina</i> ) <i>scabrata</i> , M. & H., 1860, pl. iv, figs. 2 a, b. .... | 113     |
| <i>Viviparidae.</i>                                                                               |         |
| <i>Viviparus</i> , Montfort, 1810 .....                                                           | 113-114 |
| <i>V. gilli</i> , pl. v, figs. 3 a, b .....                                                       | 114-115 |
| <i>Lioplacodes</i> , Meek, 1864 .....                                                             | 115     |
| <i>L. veteris</i> , M. & H., 1861, figs. —, p. 116. ....                                          | 115-116 |
| <i>L. veteris</i> , M. & H., 1861, figs. —, p. 116. ....                                          | 116     |
| <i>Cephalopoda.</i>                                                                               |         |
| <i>Tetrabranchiata.</i>                                                                           |         |
| <i>Ammonitides.</i> .....                                                                         | 116-118 |
| <i>Trigonellites</i> , Parkinson, 1811, fig. 1, p. 119, figs. 2-4, p. 120. ....                   | 118-120 |
| <i>Ammonites</i> , Bruguière, 1789 .....                                                          | 121-122 |
| <i>A. cordiformis</i> , M. & H., 1858, pl. v, figs. 2 a-c. ....                                   | 122-123 |
| <i>A. henryi</i> , M. & H., 1858, pl. iv, figs. 9 a-c. ....                                       | 123-124 |
| <i>Dibranchiata.</i>                                                                              |         |
| <i>Decapoda.</i>                                                                                  |         |
| <i>Belemnitidae.</i> .....                                                                        | 124     |
| <i>Belemnites</i> , Auct. ....                                                                    | 124-125 |
| <i>Acoeli</i> , Bronn .....                                                                       | 125     |
| <i>Gastrocoeli</i> , D'Orbigny = <i>Notosiphites</i> , Duval .....                                | 125     |
| <i>Notocoeli</i> , D'Orbigny = <i>Gastrosiphites</i> , Duval .....                                | 125     |
| <i>Belemnites densus</i> , M. & H., 1858, pl. iv, figs. 10 a-c, and pl. v, figs. 1, 1 a-h. ....   | 126-127 |
| <i>Articulata.</i>                                                                                |         |
| <i>Annulata.</i>                                                                                  |         |
| <i>Tubicola.</i>                                                                                  |         |
| <i>Serpulidae.</i> .....                                                                          | 137     |
| <i>Serpula</i> , Linnæus, 1758 .....                                                              | 127-128 |
| <i>Serpula</i> , undt. pl. v, fig. 4. ....                                                        | 128     |

30.

MEEK, F. B. Description of fossils from the auriferous slates of California. <Geol. surv. California, Geology, vol. i. (Appendix B), pp. 477-482, 1 plate, 1865. Published by authority of the legislature of California, 1865. Philadelphia, 1865.

Juraasio fossils.—This article is in the volume of Geology, and not in either of those devoted to Paleontology exclusively.

|                                                                                            | Page.   |
|--------------------------------------------------------------------------------------------|---------|
| <i>Amussium</i> (Klein), Bolton, 1798 .....                                                | 478     |
| Subgenus <i>Entolium</i> , Meek .....                                                      | 478     |
| <i>A. aurarium</i> , n. s., Meek, 1865, pl. i, figs. 6 and 6 a. ....                       | 478-479 |
| <i>Aucella</i> , Keyserling, 1843 .....                                                    | 479     |
| <i>A. erringtoni</i> , Gabb, sp., 1864, pl. i, figs. 2, 3, 7, 5, a-d .....                 | 479-480 |
| <i>A. erringtoni</i> , var. <i>linguiformis</i> , Meek, 1865, pl. i, figs. 1 and 1 a. .... | 481     |
| <i>Pholadomya</i> , Sowerby, 1823 .....                                                    | 481     |
| <i>Pholadomya</i> (?) <i>orbiculata</i> , Gabb, pl. i, fig. 4 .....                        | 481     |
| <i>Belemnites</i> , Auct. ....                                                             | 482     |
| <i>Belemnites pacificus</i> , Gabb .....                                                   | 482     |

31.

MEEK, F. B. Remarks on the Carboniferous and Cretaceous Rocks of Eastern Kansas and Nebraska, and their relations to those of the adjacent States, and other localities farther eastward, in connection with a review of a paper recently published on this subject by M. Jules Marcou, in the Bulletin of the Geological Society of France. <Am. Journ. Sci., vol. xxxix, 2d ser., pp. 157-174. 1865. New Haven, 1865.

The paper of Professor Marcou's referred to is the "Reconnaissance geologique du Nebraska," par Jules Marcou. Bull. Geol. Soc. France, xxi, pp. 132-147, January, 1864.

At the close of the paper Meek & Worthen describe:

|                                                              | Page. |
|--------------------------------------------------------------|-------|
| <i>Erisocrinus</i> , n. g., M. & W., 1865 .....              | 174   |
| <i>Erisocrinus typus</i> , n. s., M. & W., 1865 .....        | 174   |
| <i>Erisocrinus nebrascensis</i> , n. s., M. & W., 1865 ..... | 174   |

## Mollusca.

## Cephalopoda.

|                                                         |         |
|---------------------------------------------------------|---------|
| <i>Goniatites compactus</i> , n. s., M. & W., 1865..... | 154-155 |
|---------------------------------------------------------|---------|

## 39.

MEEK, F. B., and WORTHEN, A. H. Descriptions of New Crinoidea, &c., from the Carboniferous rocks of Illinois and some of the adjoining States. <Proc. Acad. Nat. Sci. Phila., vol. xvii, 1865, pp. 155-166. Philadelphia, 1865.

|                                                                            |         |
|----------------------------------------------------------------------------|---------|
|                                                                            | Page.   |
| <i>Poteroocrinus</i> , Miller, 1821 .....                                  | 155     |
| <i>P. indianensis</i> , n. s., M. & W., 1865 .....                         | 155-156 |
| <i>P. (Scaphiocrinus) tenuidactylus</i> , n. s., M. & W., 1865 .....       | 156-157 |
| <i>P. (Scaphiocrinus) bayensis</i> , n. s., M. & W., 1865 .....            | 157-158 |
| <i>P. (Scaphiocrinus) ? norwoodi</i> , n. s., M. & W., 1865 .....          | 158-159 |
| <i>P. (Scaphiocrinus) subtumidus</i> , n. s., M. & W., 1865 .....          | 159     |
| <i>Oyathocrinus</i> , Miller, 1821 .....                                   | 160     |
| <i>C. arboreus</i> , n. s., M. & W., 1865 .....                            | 160     |
| <i>Platycrinus</i> , Miller, 1821 .....                                    | 160-162 |
| <i>Centrocrinus</i> , Austin .....                                         | 161     |
| <i>Cupellacrinus</i> , Troost .....                                        | 161     |
| <i>Pleurocrinus</i> , Austin .....                                         | 161     |
| <i>Platycrinus niotensis</i> , n. s., M. & W., 1865 .....                  | 162     |
| <i>P. hemisphaericus</i> , n. s., M. & W., 1865 .....                      | 162-163 |
| <i>P. parvulus</i> , n. s., M. & W., 1865 .....                            | 163-164 |
| <i>Actinoocrinus</i> , Miller, 1821 .....                                  | 164     |
| Subgenus <i>Alloprosalloocrinus</i> , Lyon & Casseday, 1860 .....          | 164     |
| <i>A. (Alloprosalloocrinus) euconus</i> , n. s., M. & W., 1865 .....       | 164-165 |
| <i>Pentremites (Granatocrinus) granulatus</i> , n. s., M. & W., 1865 ..... | 165     |

## POLYZOA.

|                                                  |         |
|--------------------------------------------------|---------|
| <i>Evactinopora</i> , n. g., M. & W., 1865 ..... | 165     |
| <i>E. radiata</i> , n. s., M. & W., 1865 .....   | 165-166 |

## 40.

MEEK, F. B., and WORTHEN, A. H. Contributions to the Paleontology of Illinois and other Western States. <Proc. Acad. Nat. Sci. Phila., vol. xvii, pp. 245-273, 1865. Philadelphia, 1865.

Silurian, Devonian, Carboniferous. Genus *Endolobus*. Afterward republished in the Illinois Geological Reports, vol. ii.

## Mollusca.

## Lamellibranchiata.

|                                                                     |         |
|---------------------------------------------------------------------|---------|
|                                                                     | Page.   |
| <i>Lithophaga</i> , Bolten, 1798 .....                              | 245     |
| ( <i>Lithodomus</i> , Cuvier, 1817.) .....                          | 245     |
| <i>Lithophaga ? pertenuis</i> , n. s., M. & W., 1865 .....          | 245     |
| <i>L. ? lingualis</i> Phillips (!), sp. ....                        | 245     |
| <i>Modiolopsis</i> , Hall, 1847 .....                               | 246     |
| <i>M. perovata</i> , n. s., M. & W., 1865 .....                     | 246     |
| <i>Pleurophorus</i> , King, 1844 .....                              | 246     |
| <i>P. subcostatus</i> , n. s., M. & W., 1865 .....                  | 246-247 |
| <i>P. ? angulatus</i> , n. s., M. & W., 1865 .....                  | 247     |
| <i>P. costatiformis</i> , n. s., M. & W., 1865 .....                | 247-248 |
| <i>Grammysia</i> , De Verneuil, 1847 .....                          | 248     |
| <i>G. ? rhomboidalis</i> , n. s., M. & W., 1865 .....               | 248-249 |
| <i>Conocardium</i> , Bronn, 1837 .....                              | 249     |
| <i>C. obliquum</i> , n. s., M. & W., 1865 .....                     | 249     |
| <i>Edmondia</i> , De Koninck, 1842 .....                            | 249     |
| <i>E. ? peroblonga</i> , n. s., M. & W., 1865 .....                 | 249-250 |
| <i>Chaenomya</i> , Meek, 1865 .....                                 | 250     |
| <i>C. ? rhomboidea</i> , n. s., M. & W., 1865 .....                 | 250     |
| <i>C. ? hybrida</i> , n. s., M. & W., 1865 .....                    | 250-251 |
| <i>Sedgwickia</i> , McCoy, 1844 .....                               | 251     |
| <i>S. (Sanguinolites ?) subarcuata</i> , n. s., M. & W., 1865 ..... | 251     |



|                                                                             | Page.   |
|-----------------------------------------------------------------------------|---------|
| <i>Gasteropoda.</i>                                                         |         |
| <i>Holopea</i> , Hall, 1847 .....                                           | 251     |
| Subgenus <i>Isonema</i> , M. & W. ....                                      | 221     |
| <i>H. (Isonema) depressa</i> , n. s., M. & W., 1865 .....                   | 251-252 |
| <i>Pleurotomaria</i> , DeFrance, 1825 .....                                 | 252     |
| <i>P. (Murchisonia?) meta</i> , n. s., M. & W., 1865 .....                  | 252     |
| <i>Pteropoda.</i>                                                           |         |
| <i>Conularia</i> , Miller, 1818 .....                                       | 252     |
| <i>C. multicosata</i> , n. s., M. & W., 1865 .....                          | 252-253 |
| <i>C. subcarbonaria</i> , n. s., M. & W., 1865 .....                        | 253     |
| <i>C. whitei</i> , n. s., M. & W., 1865 .....                               | 253-254 |
| <i>Tentaculites</i> , Schlotheim, 1820 .....                                | 254     |
| <i>T. tenuistriatus</i> , n. s., M. & W., 1865 .....                        | 254     |
| <i>T. ovicegoensis</i> , n. s., M. & W., 1865 .....                         | 254-255 |
| <i>T. sterlingensis</i> , n. s., M. & W., 1865 .....                        | 255     |
| <i>Cephalopoda.</i>                                                         |         |
| <i>Orthoceras</i> , Auct. ....                                              | 255     |
| <i>O. erebriatriatum</i> , n. s., M. & W., 1865 .....                       | 255-256 |
| <i>O. subbaculum</i> , n. s., M. & W., 1865 .....                           | 256     |
| <i>O. jolietense</i> , n. s., M. & W., 1865 .....                           | 256     |
| <i>O. nobilis</i> , n. s., M. & W., 1865 .....                              | 256-257 |
| <i>O. winchellii</i> , n. s., M. & W., 1865 .....                           | 257     |
| <i>Phragmoceras</i> , Broderip, 1834 .....                                  | 257     |
| <i>P. walshii</i> , n. s., M. & W., 1865 .....                              | 257     |
| <i>Gomphoceras</i> , Sowerby, 1839 .....                                    | 258     |
| <i>G. sacculum</i> , n. s., M. & W., 1865 .....                             | 258     |
| <i>G. (Aploceras) turbiniforme</i> , n. s., M. & W., 1865 .....             | 258-259 |
| <i>Nautilus</i> , Linnæus, 1758 .....                                       | 259     |
| Subgenus <i>Endolobus</i> , M. & W., 1865 .....                             | 259     |
| <i>N. (Endolobus) peramplus</i> , n. s., M. & W., 1865 .....                | 259     |
| <i>N. (Temnocheilus) niotensis</i> , n. s., M. & W., 1865 .....             | 260     |
| Subgenus <i>Discites</i> , McCoy, 1844 .....                                | 260     |
| <i>N. (Discites) ornatus</i> Hall, var. <i>amplus</i> , M. & W., 1865 ..... | 260-261 |
| <i>N. (Discites) disciformis</i> , n. s., M. & W., 1865 .....               | 261     |
| <i>N. lasallensis</i> , n. s., M. & W., 1865 .....                          | 261-262 |
| Subgenus <i>Cryptoceras</i> , d'Orbigny, 1847 .....                         | 262     |
| <i>N. (Cryptoceras) capax</i> , n. s., M. & W., 1865 .....                  | 262     |
| <i>N. (Cryptoceras?) leidyi</i> , n. s., M. & W., 1865 .....                | 262-263 |
| <i>Trochoceras</i> , Barrande, 1847 .....                                   | 263     |
| <i>T. baeri</i> , n. s., M. & W., 1865 .....                                | 263-264 |
| <i>Articulata.</i>                                                          |         |
| <i>Crustacea.</i>                                                           |         |
| <i>Trilobita.</i>                                                           |         |
| <i>Dalmania</i> , Emmerich, 1845 .....                                      | 264     |
| <i>D. danae</i> , n. s., M. & W., 1865 .....                                | 264-266 |
| <i>Lichas</i> , Dalman, 1827 .....                                          | 266     |
| <i>L. cucullus</i> , n. s., M. & W., 1865 .....                             | 266-267 |
| <i>Prætus</i> Steininger, 1830 .....                                        | 267     |
| <i>P. ellipticus</i> , n. s., M. & W., 1865 .....                           | 267-268 |
| <i>Phillipsia</i> , Portlock, 1843 .....                                    | 268     |
| Subgenus <i>Griffithides</i> , Portlock, 1843 .....                         | 268     |
| <i>P. (Griffithides) portlockii</i> , n. s., M. & W., 1865 .....            | 268-270 |
| <i>P. (Griffithides) acitula</i> , n. s., M. & W., 1865 .....               | 270-271 |
| <i>P. (Griffithides?) sangamonensis</i> , n. s., M. & W., 1865 .....        | 271-273 |

## 41.

MEEK, F. B. Note on the affinities of the Bellerophontidæ. <Proc. Chicago Acad. of Sci., pp. 9-11, 1866. Chicago, 1866.

The author places this family near Fissurellidæ, Hallotidæ, and Pleurotomariidæ.

MEEK, F. B., and WORTHEN, A. H. Contributions to the Paleontology of Illinois and other Western States. <Proc. Acad. Nat. Sci. Phila., vol. xviii, pp. 251-275, 1866. Philadelphia, 1866.

Carboniferous fossils. Afterward republished and illustrated in the Illinois Geological Reports.

#### Radiata.

##### Echinodermata.

##### Orinoidea.

|                                                                    | Page.   |
|--------------------------------------------------------------------|---------|
| <i>Elemanocrinus whitii</i> , n. s., M. & W., 1866.....            | 251     |
| Subgenus <i>Nematocrinus</i> , M. & W., 1866.....                  | 251     |
| <i>Synbathocrinus wachemuthi</i> , n. s., M. & W., 1866.....       | 251-252 |
| <i>Cyathocrinus farleyi</i> , n. s., M. & W., 1866.....            | 252-253 |
| <i>Actinocrinus calyculus</i> var. <i>paridensis</i> , M. & W..... | 253     |
| <i>Strotocrinus</i> , n. g., M. & W., 1866.....                    | 253     |
| <i>Steganoocrinus</i> , n. g., M. & W., 1866.....                  | 253-254 |
| <i>Rhodoocrinus nanus</i> , n. s., M. & W., 1866.....              | 254     |
| <i>Onychocrinus</i> , Lyon & Casseday.....                         | 255-256 |
| <i>Onychocrinus diversus</i> , n. s., M. & W., 1866.....           | 256-257 |
| <i>Granatoocrinus shumardi</i> , n. s., M. & W., 1866.....         | 257-258 |
| <i>Granatoocrinus norwoodi</i> , O. & S. I.....                    | 258-259 |

##### Astroidea.

|                                                          |     |
|----------------------------------------------------------|-----|
| <i>Schænaster wachemuthi</i> , n. s., M. & W., 1866..... | 259 |
|----------------------------------------------------------|-----|

#### Mollusca.

##### Lamellibranchiata.

|                                                                          |         |
|--------------------------------------------------------------------------|---------|
| <i>Pteria</i> (Pterinea?) <i>morganensis</i> , n. s., M. & W., 1866..... | 259-260 |
| <i>Dolabra sterlingensis</i> , n. s., M. & W., 1866.....                 | 260-261 |
| <i>Macrodon micronema</i> , n. s., M. & W., 1866.....                    | 261     |

##### Gasteropoda.

|                                                                           |         |
|---------------------------------------------------------------------------|---------|
| <i>Platyceras</i> , Conrad, 1840.....                                     | 262-263 |
| Subgenus <i>Orthonychia</i> , Hall.....                                   | 263     |
| Subgenus <i>Igoceras</i> , Hall.....                                      | 263     |
| <i>P. lævigatum</i> , n. s., M. & W., 1866.....                           | 263-264 |
| <i>P. haliotoides</i> , n. s., M. & W., 1866.....                         | 264     |
| <i>P. unicum</i> , n. s., M. & W., 1866.....                              | 264-265 |
| <i>P.</i> (Orthonychia) <i>chesterense</i> , n. s., M. & W., 1866.....    | 265     |
| <i>P.</i> (Orthonychia) <i>subplicatum</i> , n. s., M. & W., 1866.....    | 265-266 |
| <i>P.</i> (Orthonychia) <i>infundibulum</i> , n. s., M. & W., 1866.....   | 266     |
| <i>Metoptoma</i> , Phillips, 1836.....                                    | 266-267 |
| <i>Metoptoma</i> (Platyceras?) <i>umbella</i> , n. s., M. & W., 1866..... | 267     |
| <i>Polyphemopsis chrysalis</i> , n. s., M. & W., 1866.....                | 267-268 |
| <i>Naticopsis littonana</i> var. <i>genevieveensis</i> , M. & W.....      | 268     |
| <i>Anomphalus</i> , n. g., M. & W., 1866.....                             | 268     |
| <i>A. rotulus</i> , n. s., M. & W., 1866.....                             | 268-269 |
| <i>Microdoma</i> , n. g., M. & W., 1866.....                              | 269     |
| <i>M. conica</i> , n. s., M. & W., 1866.....                              | 269-270 |
| <i>Orthonema conica</i> , n. s., M. & W., 1866.....                       | 270     |
| <i>Trochita?</i> <i>carbonaria</i> , n. s., M. & W., 1866.....            | 270-271 |
| <i>Platyschisma pettioides</i> , Sowerby? sp.....                         | 271     |
| <i>Pleurotomaria conoides</i> , n. s., M. & W., 1866.....                 | 271-272 |
| <i>Pleurotomaria coxana</i> , n. s., M. & W., 1866.....                   | 272     |
| <i>Pleurotomaria spironeuma</i> , n. s., M. & W., 1866.....               | 272-273 |
| <i>Pleurotomaria vauclatiformis</i> , n. s., M. & W., 1866.....           | 273     |
| <i>Murchisonia inornata</i> , n. s., M. & W., 1866.....                   | 274     |

##### Cephalopoda.

|                                                                                |     |
|--------------------------------------------------------------------------------|-----|
| <i>Nautilus</i> (Trematodiceus) <i>sulcatus</i> , Sowerby?.....                | 274 |
| <i>Nautilus</i> (Cryptoceras) <i>rockfordensis</i> , n. s., M. & W., 1866..... | 275 |

In a note the authors consider their previously proposed *Evactinopora* as equivalent to *Conodictyum* Münster, and call their species *C. radiatum*.



43.

MEEK, F. B., and WORTHEN, A. H. Descriptions of Paleozoic fossils from the Silurian, Devonian, and Carboniferous rocks of Illinois and other Western States. <Proc. Chicago Acad. Sci., pp. 11-23. 1866. Chicago, 1866.

Genera Monopteria Megaptera afterward republished in the Illinois Geological Reports, vol. ii.

Amorphozoa.

|                                                                       | Page. |
|-----------------------------------------------------------------------|-------|
| <i>Astylospongia</i> ? <i>carbonaria</i> , n. s., M. & W., 1866 ..... | 11-12 |
| <i>Astraeospongia hamiltonensis</i> , n. s., M. & W., 1866 .....      | 12    |

Mollusca.

Lamellibranchiata.

|                                                                                   |       |
|-----------------------------------------------------------------------------------|-------|
| <i>Placunopsis carbonaria</i> , n. s., M. & W., 1866 .....                        | 13    |
| <i>Aviculopecten randolphensis</i> , n. s., M. & W., 1866 .....                   | 14    |
| <i>A. indianensis</i> , n. s., M. & W., 1866 .....                                | 14-15 |
| <i>A. ambriatus</i> , n. s., M. & W., 1866 .....                                  | 15-16 |
| <i>Vanuxemia dixonensis</i> , n. s., M. & W., 1866 .....                          | 16-17 |
| <i>Macrodon tenuistriatus</i> , n. s. g., M. & W., 1866 .....                     | 17    |
| <i>Schizodus curtus</i> , n. s., M. & W., 1866 .....                              | 18    |
| <i>Anthracopecten</i> ? <i>fragilis</i> , n. s., M. & W., 1866 .....              | 18-19 |
| <i>Myalina meliniformis</i> , n. s., M. & W., 1866 .....                          | 19-20 |
| <i>Monopteria</i> , n. s., g., M. & W., 1866 .....                                | 20    |
| <i>Pterinea</i> ( <i>Monopteria</i> ) <i>gibbosa</i> , n. s., M. & W., 1866 ..... | 20-21 |
| <i>Pterinea</i> ? <i>subpapyracea</i> , n. s., M. & W., 1866 .....                | 21-22 |
| <i>Ambonychia</i> ( <i>Megaptera</i> ) <i>casei</i> , n. s., M. & W., 1866 .....  | 22-23 |

44.

MEEK, F. B., and WORTHEN, A. H. Descriptions of Invertebrates from the Carboniferous System. <Geological Survey of Illinois, vol. ii, pp. 145-411, plates, 14-20 and 23-32. 1866. Published by authority of the legislature of Illinois, Springfield, 1866.

Genera *Sphenopoterium*, *Cardiopsis*, *Trematodiscus*, *Strotocrinus*, *Steganoecrinus*, *Cælocrinus*, *Oligoporus*, *Erisocrinus*, *Syntrielasma*, *Eumicrotis*, *Trachydomia*, *Orthonema*, *Soleniscus*, *Acanthotelson*, *Palaecaris*, *Anthracerpes*, *Palaecampa*, *Shænaster*. Volumes ii, iii, v, and vi of these reports all comprise very important works on Invertebrate Paleontology, in which are not only species and genera described, but higher groups are defined, and many important questions are philosophically discussed.

INVERTEBRATE FOSSILS OF THE KINDERHOOK GROUP.

Protozoa.

Spongiae.

|                                                                                       | Page.   |
|---------------------------------------------------------------------------------------|---------|
| * <i>Sphenopoterium</i> , M. & W., 1860 .....                                         | 145-146 |
| <i>S. enorme</i> , M. & W., 1860, pl. xiv, figs. 1 a, 1 b .....                       | 146     |
| <i>S. enorme</i> var. <i>depressum</i> , M. & W., 1866, pl. xiv, figs. 2 a, 2 b ..... | 146     |

Radiata.

Echinodermata.

Orinoidea.

|                                                                                                        |         |
|--------------------------------------------------------------------------------------------------------|---------|
| <i>Actinocrinus</i> , Miller .....                                                                     | 147-149 |
| <i>Batocrinus</i> , Casseday ( <i>Eretmocrinus</i> Lyon ?) .....                                       | 150-151 |
| Subgenus <i>Batocrinus</i> , Casseday .....                                                            | 151     |
| Sec. C. ( <i>Uperocrinus</i> , M. & W.) .....                                                          | 151     |
| <i>Actinocrinus</i> ( <i>Batocrinus</i> ) <i>pistilliformis</i> , M. & W., 1861, pl. xiv, fig. 8 ..... | 151-153 |

Mollusca.

Brachiopoda.

|                                                                                 |         |
|---------------------------------------------------------------------------------|---------|
| <i>Rhynchonella</i> , Fischer, 1809 .....                                       | 153     |
| <i>R. missouriensis</i> , Shumard, 1855, pl. xiv, figs. 4 a, 4 b .....          | 153-154 |
| <i>Spirifer</i> , Sowerby, 1815 .....                                           | 155     |
| Subgenus <i>Martinia</i> , McCoy, 1844 .....                                    | 155     |
| <i>S. (Martinia) cooperensis</i> , Swallow, 1860, pl. xiv, figs. 5 a, 5 b ..... | 155-156 |

\* σφην, a wedge, ποτηριον, a drinking cup.

BULLETIN NO. 36, UNITED STATES NATIONAL MUSEUM.

|                                                                                                               | Page    |
|---------------------------------------------------------------------------------------------------------------|---------|
| <i>Lamellibranchiata</i>                                                                                      |         |
| <i>Cardiopsis</i> , M. & W., 1861                                                                             | 156-157 |
| <i>C. radiata</i> , M. & W., 1860, pl. xiv, figs 6 a, b                                                       | 157-158 |
| <i>Gastropoda</i>                                                                                             |         |
| <i>Strophodont</i> , Montfort, 1810                                                                           | 158-159 |
| <i>S. lens</i> , Hall, sp., 1860, pl. xiv, figs 7 a, 7 b                                                      | 159-160 |
| <i>Bellerophon</i> , Montfort, 1810                                                                           | 160     |
| <i>B. cyrtolites</i> , Hall, 1860, pl. xiv, figs 8 a, 8 b                                                     | 160-161 |
| <i>Cephalopoda</i>                                                                                            |         |
| <i>Nautilus</i> , Linnæus, 1758                                                                               | 161     |
| Subgenus <i>Trematodina</i> , M. & W., 1861                                                                   | 161-162 |
| <i>N. (Trematodina) trilineatus</i> , M. & W., 1860, pl. xiv, figs 10 a-c                                     | 162-163 |
| <i>N. diporus</i> , M. & W., 1860, pl. xiv, figs 9 a-d                                                        | 163-164 |
| <i>Goniatites</i> , de Haan, 1825                                                                             | 165     |
| <i>G. lyoni</i> , M. & W., 1860, pl. xiv, figs 11 a-c                                                         | 165-166 |
| INVERTEBRATE FOSSILS OF THE BURLINGTON GROUP.                                                                 |         |
| <i>radiata</i>                                                                                                |         |
| <i>Echinodermata</i>                                                                                          |         |
| <i>Crinoides</i>                                                                                              |         |
| <i>Dicocrinus</i> , Miller, 1821                                                                              | 167-169 |
| <i>D. conus</i> , M. & W., 1860, pl. xvi, figs 5 a, b                                                         | 169-170 |
| <i>Platycrinus</i> , Miller, 1821                                                                             | 170-172 |
| <i>Centrocrinus</i> , Austin                                                                                  | 172     |
| <i>Pleurocrinus</i> , Austin                                                                                  | 172     |
| <i>Marsupiocrinus</i> , Phillips                                                                              | 172     |
| Subgenus <i>Pleurocrinus</i> , Austin                                                                         | 173     |
| <i>Platycrinus (Pleurocrinus) subopacatus</i> , Hall, 1858, pl. xv, fig. 6                                    | 173-175 |
| <i>Cyathocrinus</i> , Miller, 1821                                                                            | 175-178 |
| <i>C. sculptilis</i> , Hall, 1860, pl. xv, fig. 2 a, b                                                        | 178-179 |
| <i>Poterocrinus</i> , Miller, 1821                                                                            | 179-182 |
| <i>P. swalloyi</i> , M. & W., 1860, pl. 16, figs 4 a, b, and fig. 3, p. 184                                   | 183-184 |
| <i>Zocrinus</i> , Troost                                                                                      | 185-186 |
| <i>Z. troostanus</i> , M. & W., 1860, pl. xvi, fig. 2 and fig. 4, p. 187                                      | 186-187 |
| <i>Strotocrinus</i> ,* M. & W., [1866]                                                                        | 188-192 |
| <i>S. perumbrosus</i> †, Hall, fig. 5, p. 188                                                                 | 188     |
| <i>S. regalis</i> , sp., Hall, 1860, pl. xvi, figs 6 a, b, fig. 6, p. 191, fig. 7, p. 192, and fig. 8, p. 194 | 191-195 |
| <i>Steganoecrinus</i> , n. g., M. & W., [1866]                                                                | 195     |
| <i>S. pentagonus</i> ‡, Hall, figs 9 a, d                                                                     | 196     |
| <i>S. sculptus</i> , Hall, figs 10, a, b, and d, p. 197                                                       | 197-198 |
| <i>S. arancolus</i> , M. & W., 1860, pl. xv, figs 1 a, b                                                      | 198-200 |
| <i>Actinoecrinus</i> , Miller, 1821                                                                           | 200     |
| <i>A. concinnus</i> , Shumard, 1855, pl. xv, figs 9 a, b, fig. 11, p. 202                                     | 200-202 |
| <i>A. scitulus</i> , M. & W., 1860, pl. xv, figs 7 a, b, and fig. 12, p. 204                                  | 202-205 |
| <i>A. sillimani</i> , M. & W., 1860, fig. 13, p. 204                                                          | 204-205 |
| Subgenus <i>Batocrinus</i> , Casseday                                                                         | 205     |
| <i>A. (Batocrinus) dodecadaetylus</i> , M. & W., 1861, pl. xv, figs 3 a-c, fig. 14, p. 206                    | 205-207 |
| <i>A. Batocrinus asteriscus</i> , M. & W., 1860, pl. xv, figs 8 a-c                                           | 207-209 |
| <i>Amphoraecrinus</i> , Austin, 1848                                                                          | 209-211 |
| <i>A. subtrubatus</i> , M. & W., 1860, pl. xv, figs 4 a, b, and fig. 15, p. 213                               | 212-213 |
| <i>Coelocrinus</i> ,‡ M. & W., 1865                                                                           | 214-215 |
| <i>C. concavus</i> , M. & W., 1861, pl. xv, figs 10 a-c, and fig. 16, p. 215                                  | 215-216 |
| <i>Gilbertocrinus</i> , Phillips = <i>Ollaecrinus</i> , Cumberland                                            | 217-219 |
| Subgenus <i>Goniasteroidocrinus</i> , Lyon & Casseday = <i>Trematocrinus</i> , Hall                           | 219     |
| <i>Gilbertocrinus bursa</i> , Phillips, fig. 17, p. 217                                                       | 217     |
| <i>G. calcaratus</i> , Phillips, fig. 18 a-c, p. 217                                                          | 217     |
| <i>Goniasteroidocrinus tuberosus</i> , Lyon & Casseday, fig. 19 a-d, p. 220                                   | 220     |
| <i>G. (Goniasteroidocrinus) fuscus</i> , M. & W., 1860, pl. xv, fig. 5, and fig. 20, p. 224                   | 222-225 |
| <i>Echinoidea</i>                                                                                             |         |
| <i>Perischæchinidae</i>                                                                                       |         |
| <i>Melonites multipora</i> , figs 21 and 22, pp. 227-228                                                      | 227-228 |

\* *στρογτος*, spread; *χρυσον*, a lily.

† *στεγανος*, covered; *χρυσον*, a lily; in allusion to the covered free rays.

‡ *χολος*, hollow; *χρυσον*, a lily.



|                                                                                                   | Page    |
|---------------------------------------------------------------------------------------------------|---------|
| <i>Palaeochinida</i> , McCoy.                                                                     |         |
| <i>Archaeocidarida</i> , McCoy.                                                                   |         |
| <i>Palaeochinus</i> , McCoy, 1844.....                                                            | 229     |
| <i>P. burlingtonensis</i> , M. & W., 1860, pl. xvi, figs. 3 a-c., and fig. 23, p. 231.....        | 230-231 |
| Mollusca.                                                                                         |         |
| <i>Lamellibranchiata</i> .                                                                        |         |
| <i>Aviculopecten</i> , McCoy, 1851.....                                                           | 231     |
| <i>A. burlingtonensis</i> , M. & W., 1860, pl. xvi, figs. 1 a, b.....                             | 231-232 |
| INVERTEBRATE FOSSILS OF THE KEOKUK GROUP.                                                         |         |
| Protozoa.                                                                                         |         |
| <i>Spongiae</i> .                                                                                 |         |
| <i>Petrospongia</i> .                                                                             |         |
| <i>Sphenopoterium</i> , M. & W., 1860.....                                                        | 233     |
| <i>S. obtusum</i> , M. & W., 1860, pl. xvii, figs. 2 a-d (by error a on pl.), 2 e.....            | 233     |
| <i>S. compressum</i> , M. & W., 1860, pl. xvii, figa. 1 a-c.....                                  | 234     |
| Radiata.                                                                                          |         |
| <i>Echinodermata</i> .                                                                            |         |
| <i>Crinoidea</i> .                                                                                |         |
| <i>Cyathocrinus</i> , Miller, 1821.....                                                           | 234     |
| <i>C. angulatus</i> , M. & W., 1860, pl. xvii, fig. 4.....                                        | 234-236 |
| <i>C. safordi</i> , M. & W., 1860, pl. xvii, figs. 5 a and b, and fig. 24, p. 237.....            | 236-237 |
| <i>Potriocrinus</i> , Miller.....                                                                 | 237     |
| Subgenus <i>Scaphiocrinus</i> , Hall, 1858.....                                                   | 237     |
| <i>P. (Scaphiocrinus) decadactylus</i> , M. & W., 1860, pl. xvii, fig. 6 and fig. 25, p. 240..... | 238-240 |
| <i>Zacrinus</i> , Troost.....                                                                     | 240     |
| <i>Z. plan-brachiatus</i> , M. & W., 1860, pl. xviii, fig. 5.....                                 | 240-241 |
| <i>Onychocrinus</i> , Lyon & Casseday, 1859.....                                                  | 242-244 |
| <i>O. monroensis</i> , M. & W., 1861, pl. xvii, fig. 7.....                                       | 244-245 |
| <i>O. norwoodi</i> , M. & W., 1860, pl. xvii, fig. 3, and fig. 26, p. 247.....                    | 245-247 |
| <i>Echinoidea</i> .                                                                               |         |
| <i>Perischoechinida</i> .                                                                         |         |
| * <i>Oligoporus</i> , M. & W., 1860.....                                                          | 247     |
| <i>Melonites multipora</i> , fig. 27.....                                                         | 248     |
| <i>Oligoporus dana</i> , M. & W., 1860, pl. xvii, fig. 8 and fig. 28, p. 248.....                 | 248-251 |
| Mollusca.                                                                                         |         |
| <i>Brachiopoda</i> .                                                                              |         |
| <i>Camarophoria</i> , King, 1844.                                                                 |         |
| <i>C. subtrigonia</i> , M. & W., 1860, pl. xviii, figs. 8 a-c.....                                | 251-253 |
| <i>Chonetes</i> , Fischer, 1837.                                                                  |         |
| <i>C. planumbona</i> , M. & W., 1860, pl. xviii, figs. 1 a-d.....                                 | 253-254 |
| <i>Athyris</i> , McCoy, 1844.                                                                     |         |
| <i>A. planosulcata</i> , Phillips† (sp.), 1836, pl. xxii, figs. 8 a-d.....                        | 254-255 |
| <i>Lamellibranchiata</i> .                                                                        |         |
| <i>Aviculopecten</i> , McCoy, 1851.....                                                           | 256     |
| <i>A. oveni</i> , M. & W., 1860, pl. xviii, figs. 2 a-c.....                                      | 256     |
| <i>A. amplus</i> , M. & W., 1860, pl. xviii, figs. 4 a-c.....                                     | 257-258 |
| <i>A. oblongus</i> , M. & W., 1860, pl. xviii, figs. 3 a and b.....                               | 258-259 |
| <i>Gasteropoda</i> .                                                                              |         |
| <i>Pleurotomaria</i> , DeFrance, 1826.....                                                        | 260     |
| <i>P. shumardi</i> , M. & W., 1860, pl. xviii, figs. 6 a and b.....                               | 260-261 |
| INVERTEBRATE FOSSILS OF THE ST. LOUIS GROUP.                                                      |         |
| Protozoa.                                                                                         |         |
| <i>Spongiae</i> .                                                                                 |         |
| <i>Petrospongia</i> .                                                                             |         |
| <i>Sphenopoterium</i> , M. & W.                                                                   |         |
| <i>S. cuneatum</i> , M. & W., 1860, pl. xix, figs. 1 a-d.....                                     | 262-263 |
| Radiata.                                                                                          |         |
| <i>Echinodermata</i> .                                                                            |         |
| <i>Crinoidea</i> .                                                                                |         |
| <i>Dichocrinus</i> , Munster.                                                                     |         |
| <i>D. constrictus</i> , M. & W., 1860, pl. xix, figs. 2 a-c.....                                  | 263-264 |
| <i>Platycrinus</i> , Miller, 1821.....                                                            | 264     |
| <i>P. prattenanus</i> , M. & W., 1860, pl. xx, fig. 2.....                                        | 264-265 |

\* ὀλίγος, few; Πόρος, a passage.

|                                                                                       | Page.   |
|---------------------------------------------------------------------------------------|---------|
| <i>P. penicillus</i> , M. & W., 1860, pl. xix, figs. 6 a-c                            | 266-267 |
| <i>P. plenus</i> , M. & W., 1860, pl. xx, fig. 3                                      | 267-268 |
| <i>Tazocerinus</i> , Phillips, 1843                                                   | 268-270 |
| <i>Forbesiocerinus</i> , de Koninck & Le Hon, 1854                                    | 270     |
| <i>Tazocerinus semiovatus</i> , M. & W., 1860, pl. xx, figs. 4 a-b                    | 273-274 |
| <b>Blastoidea.</b>                                                                    |         |
| <i>Granatocerinus</i> , Troost, 1850                                                  | 274-275 |
| <i>G. cornutus</i> , sp., M. & W., 1860, pl. xx, fig. 1                               | 276     |
| <b>Asteroidea.</b>                                                                    |         |
| * <i>Schænanaster</i> , M. & W. [1860]                                                | 277-278 |
| <i>S. sinbriatus</i> , M. & W., 1860, pl. xix, figs. 7 a-d                            | 278-280 |
| <b>Mollusca.</b>                                                                      |         |
| <b>Brachiopoda.</b>                                                                   |         |
| <i>Productus</i> , Sowerby, 1814                                                      | 280     |
| <i>P. scitulus</i> , M. & W., 1860, pl. xx, figs. 5 a-d                               | 280-281 |
| <b>Lamellibranchiata.</b>                                                             |         |
| <i>Myalina</i> , de Koninck, 1844                                                     | 281     |
| <i>M. concentrica</i> , M. & W., 1860, pl. xix, figs. 3 a-c                           | 281-282 |
| <i>Yoldia</i> , Møller, 1842                                                          | 282     |
| <i>Y. ? levistriata</i> , M. & W., 1860, pl. xx, figs. 7 a and b                      | 282-283 |
| <i>Nuculana</i> , Link, 1807                                                          | 283     |
| <i>N. ? curta</i> , M. & W., 1861, pl. xx, figs. 6 a and b                            | 283-284 |
| <b>Gasteropoda.</b>                                                                   |         |
| <i>Dentalium</i> , Linnaeus, 1758                                                     | 284     |
| <i>D. venustum</i> , M. & W., 1861, pl. xix, fig. 8                                   | 284     |
| <i>Straparollus</i> , Montfort, 1810                                                  | 285     |
| <i>S. similis</i> , M. & W., 1861, pl. xix, figs. 4 a-b                               | 285-286 |
| <i>S. similis</i> var. <i>planus</i> , M. & W., 1861, pl. xix, fig. 5 a-c             | 286     |
| <b>Cephalopoda.</b>                                                                   |         |
| <i>Orthoceras</i> , Auct.                                                             | 286     |
| <i>O. expansum</i> , M. & W., 1860, pl. xx, figs. 8 a-c                               | 286-287 |
| INVERTEBRATE FOSSILS OF THE CHESTER GROUP.                                            |         |
| <b>Radiata.</b>                                                                       |         |
| <b>Echinodermata.</b>                                                                 |         |
| <b>Orinoidea.</b>                                                                     |         |
| <i>Pterotoerinus</i> , Lyon & Casseday, 1859                                          | 288-290 |
| <i>P. crassus</i> , M. & W., 1860, pl. xxiii, figs. 2 a, b, and fig. xxix, p. 292     | 290-292 |
| <i>P. chesterensis</i> , M. & W., 1860, pl. xxiii, figs. 1 a-c, and fig. 30, p. 293   | 292-293 |
| <b>Echinoidea.</b>                                                                    |         |
| <b>Perischorichinida.</b>                                                             |         |
| <i>Archæocidaris</i> , McCoy, 1844                                                    | 294-295 |
| <i>A. mucronata</i> , M. & W., 1860, pl. xxiii, figs. 3 a-c                           | 295-296 |
| <b>Mollusca.</b>                                                                      |         |
| <b>Brachiopoda.</b>                                                                   |         |
| <i>Productus</i> , Sowerby, 1812                                                      | 297     |
| <i>P. parvus</i> , M. & W., 1860, pl. xxiii, figs. 4 a-c                              | 297-298 |
| <i>Spirifer</i> , Sowerby, 1815                                                       | 298     |
| Subgenus <i>Martinia</i> , McCoy, 1844                                                | 298     |
| <i>S. (Martinia) glaber</i> var. <i>contractus</i> , M. & W., pl. xxiii, figs. 5 a, b | 298-299 |
| <b>Lamellibranchiata.</b>                                                             |         |
| <i>Myalina</i> de Koninck, 1844                                                       | 300     |
| <i>M. angulata</i> , M. & W., 1860, pl. xxiii, figs. 7 a, b                           | 300-301 |
| <i>Schizodus</i> , King, 1844                                                         | 301     |
| <i>S. chesterensis</i> , M. & W., 1865, pl. xxiii, figs. 6 a, b                       | 301-302 |
| <b>Gasteropoda.</b>                                                                   |         |
| <i>Straparollus</i> , Montfort, 1810                                                  | 302     |
| <i>S. planidorsatus</i> , M. & W., 1860, pl. 24, figs. 2 a-c                          | 302-303 |
| <i>Pleurotomaria</i> , DeFrance, 1826                                                 | 303     |
| <i>P. chesterensis</i> , M. & W., 1860, pl. xxiv, figs. 1 a-c                         | 303-304 |
| <b>Cephalopoda.</b>                                                                   |         |
| <i>Orthoceras</i> , Auct.                                                             | 304     |
| <i>O. annulato-costatum</i> , M. W., 1861, pl. xxiv, figs. 3 a, b                     | 304-305 |

\* σχοινος, a rope; αστηρ, a star.



|                                                                                                 | Page.   |
|-------------------------------------------------------------------------------------------------|---------|
| <i>Nautilus</i> , Linnaeus, 1758.....                                                           | 305     |
| <i>N. globatus</i> , Sowerby? 1825, pl. xxiv, figs. 5 a, b.....                                 | 305-306 |
| <i>N. chesterensis</i> , M. & W., 1860, pl. xxiv, figs. 4 a, b.....                             | 306-307 |
| Subgenus <i>Endolobus</i> ,* M. & W., 1865.....                                                 | 307-308 |
| <i>N. (Endolobus) spectabilis</i> , M. & W., 1860, pl. xxv, figs. 1 a, b.....                   | 308-309 |
| INVERTEBRATE FOSSILS OF THE COAL MEASURES.                                                      |         |
| <i>Radiata.</i>                                                                                 |         |
| <i>Crinoidea.</i>                                                                               |         |
| <i>Cyathocrinus</i> , Miller, 1821.....                                                         | 310     |
| <i>C. ? sangamonensis</i> , M. & W., 1861, pl. xxvi, figs. 1 a, b, and fig. 31, p. 311.....     | 310-312 |
| <i>Zeacrinus</i> , Troost.....                                                                  | 312     |
| <i>Z. discus</i> , M. & W., 1860, pl. xxvi, figs. 3 a, b.....                                   | 312-313 |
| <i>Z. ? crassus</i> , M. & W., 1860, pl. xxvi, figs. 2 a, b, and fig. 32, p. 315.....           | 314-315 |
| <i>Eriocrinus</i> , M. & W., 1865.....                                                          | 315-317 |
| <i>E. typus</i> , M. & W., 1865, fig. 33, p. 317, and fig. 34 a-c, p. 318.....                  | 317-318 |
| <i>E. conoideus</i> , M. & W., 1865, figs. 35 a, b.....                                         | 318-319 |
| <i>E. tuberculatus</i> , M. & W., 1865.....                                                     | 319-320 |
| <i>Mollusca.</i>                                                                                |         |
| <i>Brachiopoda.</i>                                                                             |         |
| <i>Productus</i> , Sowerby, 1812.....                                                           | 320     |
| <i>P. nanus</i> , M. & W., 1860, pl. xxvi, figs. 4 a-d.....                                     | 320-321 |
| <i>Syntrielasma</i> , M. & W., 1865.....                                                        | 321-323 |
| <i>S. hemiplicata</i> , Hall, (sp.), 1862, figs. 36 a-c, p. 322, and fig. 37 a, b, p. 324.....  | 322-325 |
| <i>Lamellibranchiata.</i>                                                                       |         |
| <i>Aviculopecten</i> , McCoy, 1852.....                                                         | 326     |
| <i>A. coxanus</i> , M. & W., 1860, pl. xxvi, fig. 6 a, b.....                                   | 326-327 |
| <i>A. pellucidus</i> , M. & W., 1860, pl. xxvi, fig. 5 a, b.....                                | 327-328 |
| <i>A. koninckii</i> , M. & W., 1860, pl. xxvi, fig. 8.....                                      | 328-329 |
| <i>A. interlineatus</i> , M. & W., 1860, pl. xxvi, fig. 7 a, b.....                             | 329-330 |
| <i>A. occidentalis</i> , Shumard? 1855 pl. xxvii, figs. 4, 5, 5 a.....                          | 331-332 |
| <i>Streblopteria</i> , McCoy, 1851.....                                                         | 332-334 |
| <i>S. ? tenuilineata</i> , M. & W., 1860, pl. xxvi, figs. 9 a, b.....                           | 334-336 |
| <i>Eumicrotis</i> , Meek, 1864.....                                                             | 336-337 |
| <i>E. havani</i> var. <i>sinuata</i> , M. & W. [1866], pl. xxvii, figs. 12 a, 12 b, 13, 14..... | 338-339 |
| <i>Pterinea</i> , Goldfuss, 1833.....                                                           | 339     |
| Subgenus <i>Monopteria</i> ,† M. & W., 1866.....                                                | 339-340 |
| <i>P. (Monopteria) gibbosa</i> , M. & W., 1866, pl. xxvii, figs. 11, 11 a, b.....               | 340-341 |
| <i>Myalina</i> , de Koninck, 1844.....                                                          | 341     |
| <i>M. svallovi</i> , McChesney, 1860, pl. xxvii, figs. 1 a-d.....                               | 341-342 |
| <i>M. metiniformis</i> , M. & W., 1860, pl. xxvii, fig. 3.....                                  | 343-344 |
| <i>M. recurvirostris</i> , M. & W., 1860, pl. xxvi, figs. 9 a-c.....                            | 344-345 |
| <i>Schizodus</i> , King, 1844.....                                                              | 345     |
| <i>Schizodus</i> , —, sp. 1, pl. xxvii, fig. 7.....                                             | 345-346 |
| <i>Edmondia</i> , de Koninck, 1844.....                                                         | 346     |
| <i>E. unioniformis</i> , sp., Phillips, 1836, pl. xxvii, figs. 6, 6 a and b.....                | 346-347 |
| <i>Pleurophorus</i> , King, 1844.....                                                           | 347     |
| <i>P. subcostatus</i> , M. & W., 1865, pl. xxvii, figs. 2, 2 a.....                             | 347-349 |
| <i>Solenomya</i> , Lamarck, 1819.....                                                           | 349     |
| <i>S. radiata</i> , M. & W., 1860, pl. xxvi, fig. 10 a, b.....                                  | 349-350 |
| <i>Allorisma</i> , King, 1844.....                                                              | 350     |
| <i>Allorisma</i> , sp. undt., pl. xxvii, figs. 9, 9 a.....                                      | 350     |
| <i>Gasteropoda.</i>                                                                             |         |
| <i>Pleurotomaria</i> , DeFrance, 1826.....                                                      | 351     |
| <i>P. subconstricta</i> , M. & W., 1860, pl. xxviii, figs. 6 a-c.....                           | 351-352 |
| <i>P. speciosa</i> , M. & W., 1860, pl. xxviii, figs. 5 a-c.....                                | 352-353 |
| <i>P. scitula</i> , M. & W., 1860, pl. xxviii, figs. 9 a-d.....                                 | 353-354 |
| <i>P. brazoensis</i> , Shumard? 1860, pl. xxviii, figs. 1 a-d.....                              | 354-355 |
| <i>P. tenuicincta</i> , M. & W., 1860, pl. xxviii, fig. 3 a-d.....                              | 355-356 |
| <i>P. granulo-striata</i> , M. & W., 1860, pl. xxviii, fig. 2 a-d.....                          | 356-357 |
| <i>P. prattensis</i> , M. & W., 1860, pl. xxviii, fig. 7 a-d.....                               | 357-358 |
| <i>P. subsinuata</i> , M. & W., 1860, pl. xxvii, figs. 4 a-d.....                               | 358-359 |
| <i>P. turbiniformis</i> , M. & W., 1860, pl. xxviii, figs. 8 a-c.....                           | 359-360 |

\* ενδον, within; λοβος, a lobe.

† μονος, solitary; πτερον, a wing.

|                                                                                             | Page.   |
|---------------------------------------------------------------------------------------------|---------|
| <i>P. penicillus</i> , M. & W., 1860, pl. xix, figs. 6 a-c .....                            | 266-267 |
| <i>P. plenus</i> , M. & W., 1860, pl. xx, fig. 3 .....                                      | 267-268 |
| <i>Tazacrinus</i> , Phillips, 1843 .....                                                    | 268-270 |
| <i>Forbesocrinus</i> , de Koninck & Le Hon, 1854 .....                                      | 270     |
| <i>Tazacrinus semiovarius</i> , M. & W., 1860, pl. xx, figs. 4 a-b .....                    | 272-274 |
| <b>Blastoidea.</b>                                                                          |         |
| <i>Granatocrinus</i> , Troost, 1850 .....                                                   | 274-275 |
| <i>G. cornutus</i> , sp., M. & W., 1860, pl. xx, fig. 1 .....                               | 276     |
| <b>Asteroides.</b>                                                                          |         |
| * <i>Schænestes</i> , M. & W. [1860] .....                                                  | 277-278 |
| <i>S. ambriatus</i> , M. & W., 1860, pl. xix, figs. 7 a-d .....                             | 278-280 |
| <b>Mollusca.</b>                                                                            |         |
| <b>Brachiopoda.</b>                                                                         |         |
| <i>Productus</i> , Sowerby, 1814 .....                                                      | 280     |
| <i>P. scitulus</i> , M. & W., 1860, pl. xx, figs. 5 a-d .....                               | 280-281 |
| <b>Lamellibranchiata.</b>                                                                   |         |
| <i>Myalina</i> , de Koninck, 1844 .....                                                     | 281     |
| <i>M. concentrica</i> , M. & W., 1860, pl. xix, figs. 3 a-c .....                           | 281-282 |
| <i>Yoldia</i> , Møller, 1842 .....                                                          | 282     |
| <i>Y. ? levistriata</i> , M. & W., 1860, pl. xx, figs. 7 a and b .....                      | 282-283 |
| <i>Nuculana</i> , Link, 1807 .....                                                          | 283     |
| <i>N. ? curta</i> , M. & W., 1861, pl. xx, figs. 6 a and b .....                            | 283-284 |
| <b>Gastropoda.</b>                                                                          |         |
| <i>Dentalium</i> , Linnaeus, 1758 .....                                                     | 284     |
| <i>D. venustum</i> , M. & W., 1861, pl. xix, fig. 8 .....                                   | 284     |
| <i>Straparollus</i> , Montfort, 1810 .....                                                  | 285     |
| <i>S. similis</i> , M. & W., 1861, pl. xix, figs. 4 a-b .....                               | 285-286 |
| <i>S. similis</i> var. <i>planus</i> , M. & W., 1861, pl. xix, fig. 5 a-c .....             | 286     |
| <b>Cephalopoda.</b>                                                                         |         |
| <i>Orthoceras</i> , Auct. ....                                                              | 286     |
| <i>O. expansum</i> , M. & W., 1860, pl. xx, figs. 8 a-c .....                               | 286-287 |
| <b>INVERTEBRATE FOSSILS OF THE CHESTER GROUP.</b>                                           |         |
| <b>Radiata.</b>                                                                             |         |
| <b>Echinodermata.</b>                                                                       |         |
| <b>Orinoidea.</b>                                                                           |         |
| <i>Pterotocrinus</i> , Lyon & Casseday, 1859 .....                                          | 288-290 |
| <i>P. crassus</i> , M. & W., 1860, pl. xxiii, figs. 2 a, b, and fig. xxix, p. 292 .....     | 290-292 |
| <i>P. chesterensis</i> , M. & W., 1860, pl. xxiii, figs. 1 a-c, and fig. 30, p. 293 .....   | 292-293 |
| <b>Echinoidea.</b>                                                                          |         |
| <b>Perisphæchinidae.</b>                                                                    |         |
| <i>Archæocidaris</i> , McCoy, 1844 .....                                                    | 294-295 |
| <i>A. mucronata</i> , M. & W., 1860, pl. xxiii, figs. 3 a-c .....                           | 295-296 |
| <b>Mollusca.</b>                                                                            |         |
| <b>Brachiopoda.</b>                                                                         |         |
| <i>Productus</i> , Sowerby, 1812 .....                                                      | 297     |
| <i>P. parvus</i> , M. & W., 1860, pl. xxiii, figs. 4 a-c .....                              | 297-298 |
| <i>Spirifer</i> , Sowerby, 1815 .....                                                       | 298     |
| Subgenus <i>Martinia</i> , McCoy, 1844 .....                                                | 298     |
| <i>S. (Martinia) glaber</i> var. <i>contractus</i> , M. & W., pl. xxiii, figs. 5 a, b ..... | 298-299 |
| <b>Lamellibranchiata.</b>                                                                   |         |
| <i>Myalina</i> de Koninck, 1844 .....                                                       | 299     |
| <i>M. angulata</i> , M. & W., 1860, pl. xxiii, figs. 7 a, b .....                           | 299-301 |
| <i>Schizodus</i> , King, 1844 .....                                                         | 301     |
| <i>S. chesterensis</i> , M. & W., 1865, pl. xxiii, figs. 6 a, b .....                       | 301-302 |
| <b>Gastropoda.</b>                                                                          |         |
| <i>Straparollus</i> , Montfort, 1810 .....                                                  | 302     |
| <i>S. planidorsatus</i> , M. & W., 1860, pl. 24, figs. 2 a-c .....                          | 302-303 |
| <i>Pleurotomaria</i> , DeFrance, 1826 .....                                                 | 303     |
| <i>P. chesterensis</i> , M. & W., 1860, pl. xxiv, figs. 1 a-c .....                         | 303-304 |
| <b>Cephalopoda.</b>                                                                         |         |
| <i>Orthoceras</i> , Auct. ....                                                              | 304     |
| <i>O. annulato-costatum</i> , M. W., 1861, pl. xxiv, figs. 3 a, b .....                     | 304-305 |

\* σχοινος, a rope; αστρα, a star.

Insecta.

Page.

Lepidoptera.

|                                                           |         |
|-----------------------------------------------------------|---------|
| <i>Palaeocampa</i> , *M. & W. [1865].....                 | 401     |
| <i>P. anthrax</i> , M. & W., 1865, pl. xxxii, fig. 3..... | 410-411 |

45.

MEEK, F. B. Check-lists of the Invertebrate fossils of North America. Cretaceous and Jurassic. < Smithsonian Miscellaneous Collections (No. 177), pp. 1-40. 1864. Washington, 1867.

Contains, besides list, "Notes and explanations" of generic and specific characters of much importance.

The following species are discussed in the notes and explanations:

CRETACEOUS.

|                                                                                                                   | Page. |
|-------------------------------------------------------------------------------------------------------------------|-------|
| <i>Planularia cuneata</i> , Mort. = <i>Phonemus</i> ( <i>Flabellina</i> ) <i>cuneatus</i> , (Mort.) Meek.....     | 31    |
| <i>Palmula sagittaria</i> , Lea = <i>Phonemus</i> ( <i>Flabellina</i> ) <i>sagittarius</i> , (Lea) Meek.....      | 31    |
| <i>Orbitulites texanus</i> , Roemer = <i>Tynoporus</i> ( <i>Orbitolina</i> ) <i>texanus</i> , (Roemer) Meek.....  | 31    |
| <i>Grammostomum phyllodes</i> , Ehrenburg = <i>Textularia phyllodes</i> , (Ehrenburg) Meek.....                   | 31    |
| <i>Plagiostoma echinatum</i> , Mort. = <i>Spondylus echinatus</i> , (Mort.) Meek.....                             | 31    |
| <i>Olenoides acutilineata</i> , Con. = <i>Lima acutilineata</i> , (Con.) Meek.....                                | 31    |
| <i>Olenoides denticulata</i> , Gabb. = <i>Lima denticulata</i> , (Gabb.) Meek.....                                | 31    |
| <i>Plagiostoma pelagicum</i> , Mort. = <i>Lima pelagica</i> , (Mort.) Meek.....                                   | 31    |
| <i>Olenoides squarrosa</i> , Gabb. = <i>Lima squarrosa</i> , (Gabb.) Meek.....                                    | 31    |
| <i>Syncyclonema</i> , Meek.....                                                                                   | 31    |
| <i>Pecten rigida</i> , H. & M. = <i>Syncyclonema</i> ? <i>rigida</i> , (H. & M.) Meek.....                        | 31    |
| <i>Leda bisulcata</i> , M. & H. = <i>Nuculana bisulcata</i> , (M. & H.) Meek.....                                 | 31    |
| <i>Leda longifrons</i> , Con. = <i>Nuculana longifrons</i> , (Con.) Meek.....                                     | 32    |
| <i>Leda pinnaformis</i> , Gabb. = <i>Nuculana pinnaformis</i> , (Gabb.) Meek.....                                 | 32    |
| <i>Leda protecta</i> , Gabb. = <i>Nuculana protecta</i> , (Gabb.) Meek.....                                       | 32    |
| <i>Leda slackiana</i> , Gabb. = <i>Nuculana slackiana</i> , (Gabb.) Meek.....                                     | 32    |
| <i>Leda subangulata</i> , Gabb. = <i>Nuculana subangulata</i> , (Gabb.) Meek.....                                 | 32    |
| <i>Avicula abrupta</i> , Con. = <i>Pteria abrupta</i> , (Con.) Meek.....                                          | 32    |
| <i>Avicula convexo-plano</i> , Roemer = <i>Pteria convexo-plano</i> , (Roemer) Meek.....                          | 32    |
| <i>Avicula cretacea</i> , Con. = <i>Pteria cretacea</i> , (Con.) Meek.....                                        | 32    |
| <i>Avicula haydeni</i> , H. & M. = <i>Pteria haydeni</i> (H. & M.) Meek.....                                      | 32    |
| <i>Avicula iridescens</i> , Shumard = <i>Pteria iridescens</i> , (Shum.) Meek.....                                | 32    |
| <i>Avicula laripes</i> , Mort. = <i>Pteria laripes</i> , (Morton) Meek.....                                       | 32    |
| <i>Avicula linguiformis</i> , E. & S. = <i>Pteria linguiformis</i> , (E. & S.) Meek.....                          | 32    |
| <i>Avicula nebrascana</i> , E. & S. = <i>Pteria nebrascana</i> , (E. & S.) Meek.....                              | 32    |
| <i>Avicula pederalis</i> , Roemer = <i>Pteria pederalis</i> , (Roemer) Meek.....                                  | 32    |
| <i>Avicula petrosa</i> , Conrad = <i>Pteria petrosa</i> , (Con.) Meek.....                                        | 32    |
| <i>Avicula planisulca</i> , Roemer = <i>Pteria planisulca</i> , (Roemer) Meek.....                                | 32    |
| <i>Avicula subgibbosa</i> , M. & H. = <i>Pteria subgibbosa</i> , (M. & H.) Meek.....                              | 32    |
| <i>Avicula triangularis</i> , E. & S. = <i>Pteria triangularis</i> , (E. & S.) Meek.....                          | 32    |
| <i>Actinoceramus</i> , Meek.....                                                                                  | 32    |
| <i>Inoceramus sulcatus</i> , Parkinson = <i>Inoceramus</i> ( <i>Actinoceramus</i> ) <i>costellatus</i> , Con..... | 32    |
| <i>Volsella attenuata</i> , M. & H. = <i>Modiola attenuata</i> , M. & H.....                                      | 32    |
| <i>Volsella concentrico-costellata</i> , Roemer = <i>Modiola concentrico-costellata</i> , Roemer.....             | 32    |
| <i>Volsella cretacea</i> , Con. = <i>Modiola cretacea</i> , Conrad.....                                           | 32    |
| <i>Volsella julia</i> , Lea = <i>Modiola julia</i> , Lea.....                                                     | 32    |
| <i>Volsella meekii</i> , Evans & Shumard = <i>Modiola meekii</i> , E. & S.....                                    | 32    |
| <i>Volsella pederalis</i> , Roemer = <i>Modiola pederalis</i> , Roemer.....                                       | 32    |
| <i>Volsella saffordi</i> , Gabb. = <i>Modiola saffordi</i> , Gabb.....                                            | 32    |
| <i>Modiola granulato-cancellata</i> , Roemer = <i>Orenella granulato-cancellata</i> , (Roemer) Meek ..            | 32    |
| <i>Liopistha</i> , Meek.....                                                                                      | 32    |
| <i>Cardium elegantulum</i> , Roemer = <i>Papyridea</i> ( <i>Liopistha</i> ) <i>elegantula</i> , (Roem.) Con.....  | 32    |
| <i>Corbula</i> sp. ind., Owen = <i>Papyridea</i> ( <i>Liopistha</i> ) <i>rostrata</i> , Meek.....                 | 33    |
| <i>Cardium</i> ? <i>sancti-sabae</i> , Roemer = <i>Papyridea</i> ? <i>sancti-sabae</i> , (Roem.), Meek.....       | 33    |
| <i>Cyprina arenaria</i> , M. & H. = <i>Cyrena arenaria</i> , (M. & H.) Meek.....                                  | 33    |
| <i>Cyprina humilis</i> , M. & H. = <i>Venilia humilis</i> , (M. & H.) Meek.....                                   | 33    |
| <i>Venilia quadrata</i> , Gabb. = <i>Venilia gabbana</i> Meek.....                                                | 33    |

\* παλαιος, ancient; χαμπη, a caterpillar.



|                                                                                                                        | Page  |
|------------------------------------------------------------------------------------------------------------------------|-------|
| <i>Cyprina subtumida</i> , M. & H. = <i>Venilia subtumida</i> , (M. & H.) Meek                                         | 21    |
| <i>Cyprina laphami</i> , Shumard = <i>Venilia laphami</i> , (Shum.) Meek                                               | 21    |
| <i>Venus ? circularis</i> , M. & H. = <i>Cyclina ? circularis</i> , (M. & H.) Meek                                     | 21    |
| <i>Callista eufalensis</i> , Con. = <i>Dione eufalensis</i> , (Con.) Meek                                              | 21    |
| <i>Cytherea deweyi</i> , M. & H. = <i>Dione Deweyi</i> , (M. & H.) Meek                                                | 21    |
| <i>Cytherea leonensis</i> , Con. = <i>Dione leonensis</i> , (Con.) Meek                                                | 21    |
| <i>Cytherea lamarensis</i> , Shum. = <i>Dione lamarensis</i> , (Shumard) Meek                                          | 21    |
| <i>Cytherea missouriana</i> , Mort. = <i>Dione missouriana</i> , (Morton) Meek                                         | 21    |
| <i>Cytherea nebrascensis</i> , M. & H. = <i>Dione nebrascensis</i> , M. & H.                                           | 21    |
| <i>Cytherea orbiculata</i> , H. & M. = <i>Dione orbiculata</i> , (H. & M.) Meek                                        | 21    |
| <i>Cytherea owenana</i> , M. & H. = <i>Dione owenana</i> , (Meek & Hayden) Meek                                        | 21    |
| <i>Cytherea pellucida</i> , M. & H. = <i>Dione ? pellucida</i> , (M. & H.) Meek                                        | 21    |
| <i>Cytherea texana</i> , Conrad = <i>Dione texana</i> , (Con.) Meek                                                    | 21    |
| <i>Cytherea tippiana</i> , Conrad = <i>Dione tippiana</i> , (Con.) Meek                                                | 21    |
| <i>Venus meekiana</i> , Gabb. = <i>Dione [?] meekiana</i> , (Gabb) Meek                                                | 21    |
| <i>Venus riplejana</i> , Gabb. = <i>Dione [?] riplejana</i> , (Gabb) Meek                                              | 21    |
| <i>Cytherea tenuis</i> , H. & M. = <i>Dione [?] tenuis</i> , (H. & M.) Meek                                            | 21    |
| <i>Tellina formosa</i> , M. & H. = <i>Abra ? formosa</i> , (M. & H.) Meek                                              | 24    |
| <i>Solen irradians</i> , Römer = <i>Linearia irradians</i> , (Römer) Meek                                              | 34    |
| <i>Psammobia cancellato-sculpta</i> , Römer = <i>Linearia cancellato-sculpta</i> , (Römer), Meek                       | 34    |
| <i>Oymella</i> , Meek                                                                                                  | 34    |
| <i>Pholadomya undata</i> , M. & H. = <i>Pholadomya (Oymella) undata</i> , (M. & H.)                                    | 34    |
| <i>Leda fibrosa</i> , Evans & Shumard = <i>Nezara fibrosa</i> , (E. & S.) Meek                                         | 34    |
| <i>Goniochaasma</i> , Meek                                                                                             | 34    |
| <i>Xylophaga stimpsoni</i> , M. & H. = <i>Goniochaasma stimpsoni</i> , (M. & H.) Meek                                  | 34    |
| <i>Xylophagella</i> , Meek                                                                                             | 34    |
| <i>Xylophaga elegantula</i> , M. & H. = <i>Xylophagella elegantula</i> , (M. & H.) Meek                                | 34    |
| <i>Ringicula pulchella</i> , Shumard = <i>Cinulia (Avellana) pulchella</i> , (Shum.) Meek                              | 34    |
| <i>Acteonina naticoides</i> , Gabb. = <i>Cinulia naticoides</i> , (Gabb) Meek                                          | 35    |
| <i>Ringicula subpellucida</i> , Shumard = <i>Ringinella subpellucida</i> , (Shum.) Meek                                | 35    |
| <i>Ringicula acutispira</i> , Shumard = <i>Ringinella acutispira</i> , (Shum.) Meek                                    | 35    |
| <i>Acteonina bicipitata</i> , Gabb. = <i>Solidula bicipitata</i> , (Gabb) Meek                                         | 35    |
| <i>Scalpellum inequicostatum</i> , Shumard = <i>Anisomyon ? inequicostatus</i> , (Shum.)                               | 35    |
| <i>Capulus occidentalis</i> , H. & M. = <i>Tectura ? occidentalis</i> , (H. & M.) Meek                                 | 35    |
| <i>Phasianella haleana</i> , d'Orbigny = <i>Eutropia haleana</i> , (d'Orb.) Meek                                       | 35    |
| <i>Phasianella perovata</i> , Shumard = <i>Eutropia perovata</i> , Shumard                                             | 35    |
| <i>Phasianella punctata</i> , Gabb. = [ <i>Eutropia</i> ] <i>punctata</i> , Gabb.                                      | 35    |
| <i>Architectonica abotti</i> , Gabb. = <i>Margaritella abotti</i> , (Gabb) Meek                                        | 35    |
| <i>Solarium abyssinus</i> , Gabb. = <i>Margarita abyssinus</i> , (Gabb) Meek                                           | 35    |
| <i>Nerita (Nereis) densata</i> , Conrad = <i>Neritella (Nereis) densata</i> , (Con.) Meek                              | 35    |
| <i>Natica ambigua</i> , M. & H. = <i>Vanikoro ambigua</i> , (M. & H.) Meek                                             | 35    |
| <i>Natica tuomeyana</i> , M. & H. = <i>Neritopsis ? tuomeyana</i> , (M. & H.) Meek                                     | 35    |
| <i>Spiro-nema</i> , Meek                                                                                               | 35    |
| <i>Turbo tenuilineata</i> , M. & H. = <i>Spiro-nema tenuilineata</i> , (M. & H.) Meek                                  | 35    |
| <i>Tuba ? bella</i> , Conrad = <i>Spiro-nema bella</i> , (Con.) Meek                                                   | 35    |
| <i>Rostellaria biangulata</i> , M. & H. = <i>Anchura ? biangulata</i> , (M. & H.) Meek                                 | 35    |
| <i>Aporrhais parva</i> , M. & H. = <i>Anchura ? parva</i> , (M. & H.) Meek                                             | 35    |
| <i>Aporrhais sublaevis</i> , M. & H. = <i>Anchura ? sublaevis</i> , (M. & H.) Meek                                     | 35    |
| <i>Drepanocheilus</i> , Meek                                                                                           | 35    |
| <i>Rostellaria americana</i> , Evans & Shum. = <i>Anchura (Drepanoch[e]ilus) americana</i> ,<br>(Evans & Shumard) Meek | 35-36 |
| <i>Aporrhais decemlirata</i> , Conrad = <i>Anchura (Drepanoch[e]ilus) decemlirata</i> , (Con.) Meek                    | 36    |
| <i>Rostellaria nebrascensis</i> , Evans & Shumard = <i>Anchura (Drepanoch[e]ilus) nebrascensis</i> ,<br>(E. & S.) Meek | 36    |
| <i>Rostellaria rostrata</i> , Gabb. = <i>Anchura (Drepanoch[e]ilus) rostrata</i> , (Gabb) Meek                         | 36    |
| <i>Isopleura</i> , Meek                                                                                                | 36    |
| <i>Rimella curvilirata</i> , Conrad = <i>Isopleurus curviliratus</i> , (Con.) Meek                                     | 36    |
| <i>Chemnitzia meekiana</i> , Gabb. = <i>Isopleurus meekianus</i> , (Gabb) Meek                                         | 36    |
| <i>Pterocerella</i> , Meek                                                                                             | 36    |
| <i>Harpago tippiana</i> = <i>Pterocerella tippiana</i> , (Con.) Meek                                                   | 36    |
| <i>Chemnitzia</i> , Conrad, 1860 (not d'Orb) = <i>Chemnitzia corona</i> (Con.), Meek                                   | 36    |
| <i>Scaloria texana</i> , Römer = <i>Chemnitzia ? texana</i> , (Römer) Meek                                             | 36    |
| <i>Scaloria forshayii</i> , Shumard = <i>Scala forshayii</i> , (Shumard) Meek                                          | 36    |
| <i>Natica acutispira</i> , Shumard = <i>Lunatia ? acutispira</i> , (Shumard) Meek                                      | 36    |
| <i>Volutilites bella</i> , Gabb. = <i>Rostellites bellus</i> , (Gabb) Meek                                             | 36    |



|                                                                                                                  | Page. |
|------------------------------------------------------------------------------------------------------------------|-------|
| <i>Volutilithes biplicata</i> , Gabb. = <i>Rostellites biplicatus</i> , (Gabb) Meek.....                         | 36    |
| <i>Volutilithes conradi</i> , Gabb. = <i>Rostellites conradi</i> , (Gabb) Meek.....                              | 36    |
| <i>Volutilithes nasuta</i> , Gabb. = <i>Rostellites nasutus</i> , (Gabb), Meek.....                              | 36    |
| <i>Trachytriton</i> , Meek.....                                                                                  | 37    |
| <i>Fusus</i> ? <i>vinculum</i> , H. & M. = <i>Trachytriton vinculum</i> , (H. & M.) Meek.....                    | 37    |
| <i>Pleurotomaria tezana</i> , Shumard = <i>Turris tezana</i> , (Shumard) Meek.....                               | 37    |
| <i>Piestochilus</i> , Meek, n. g. 1864.....                                                                      | 37    |
| <i>Fusus scarboroughi</i> , M. & H. = <i>Clavellithes (Piestochilus) scarboroughi</i> , (M. & H.) Meek.....      | 37    |
| <i>Fusus vaughani</i> , M. & H. = <i>Cantharus</i> ? <i>vaughani</i> , (M. & H.) Meek.....                       | 37    |
| <i>Fusus</i> ? <i>flexicostatus</i> , M. & H. = <i>Pyrifusus</i> ? <i>flexicostatus</i> , (M. & H.) Meek.....    | 37    |
| <i>Fusus haleanus</i> , d'Orbigny = <i>Pyrifusus</i> ? <i>haleanus</i> , (d'Orb.) Meek.....                      | 37    |
| <i>Neptunea impressa</i> , Gabb. = <i>Pyrifusus</i> ? <i>impressus</i> , (Gabb) Meek.....                        | 37    |
| <i>Fusus intertextus</i> , M. & H. = <i>Pyrifusus intertextus</i> , (M. & H.) Meek.....                          | 37    |
| <i>Fusus newberryi</i> , M. & H. = <i>Pyrifusus newberryi</i> , (M. & H.) Meek.....                              | 37-38 |
| <i>Fusus subturritus</i> , M. & H. = <i>Pyrifusus subturritus</i> , (M. & H.) Meek.....                          | 38    |
| <i>Fusus</i> ? <i>tenuilineatus</i> , H. & M. = <i>Tritonifusus</i> ? <i>tenuilineatus</i> , (H. & M.) Meek..... | 38    |
| <i>Pleurotomaria mullicaensis</i> , Gabb = <i>Fusus mullicaensis</i> , Gabb.....                                 | 38    |
| <i>Pyrula bairdi</i> , M. & H. = <i>Tudicla (Pyropsis) bairdi</i> , (M. & H.) Meek.....                          | 38    |
| <i>Fusus</i> ? <i>dakotensis</i> , M. & H. = <i>Tudicla</i> ? <i>dakotensis</i> , (M. & H.) Meek.....            | 38    |
| <i>Hamites leai</i> , Troost = <i>Ptychoceras leai</i> , (Troost) Meek.....                                      | 38    |
| <i>Hamites verneuili</i> , Troost = <i>Ptychoceras verneuili</i> , (Troost) Meek.....                            | 38    |
| <i>Turritiles</i> sp. undt. = <i>Heteroceras ovenci</i> , Meek.....                                              | 38    |
| <i>Helicoceras tortum</i> , M. & H. = <i>Heteroceras tortum</i> , (M. & H.) Meek.....                            | 38    |
| <i>Helicoceras</i> ? <i>angulatum</i> , M. & H. = <i>Heteroceras</i> ? <i>angulatum</i> , (M. & H.) Meek.....    | 38    |
| <i>Turritiles cheyennensis</i> , M. & H. = <i>Heteroceras</i> ? <i>cheyennensis</i> , (M. & H.) Meek.....        | 38    |
| <i>Nautilus orbiculatus</i> , Tuomey = ? <i>Astoria orbiculata</i> , (Tuomey) Meek.....                          | 38    |
| <i>Belemnites paxillosa</i> , Lamarck = <i>Belemnitella paxillosa</i> , (Lamarck) Meek.....                      | 38    |
| <i>Vermetus rotula</i> , Morton = <i>Spirulæa rotula</i> , (Morton) Meek.....                                    | 38    |

JURASSIC.

|                                                                                                    |    |
|----------------------------------------------------------------------------------------------------|----|
| <i>Camptonectes</i> , Agassiz, MSS. [1864].....                                                    | 39 |
| <i>Pecten bellistriatus</i> , Meek = <i>Camptonectes bellistriatus</i> , Meek.....                 | 39 |
| <i>Pecten extenuatus</i> , M. & H. = <i>Camptonectes</i> ? <i>extenuatus</i> , (M. & H.) Meek..... | 39 |
| <i>Avicula</i> ? <i>curta</i> , Hall = <i>Eumicratis curta</i> , (Hall) Meek.....                  | 39 |
| <i>Oxytoma</i> , Meek.....                                                                         | 39 |
| <i>Avicula munsteri</i> , Brown = <i>Pteria (Oxytoma) munsteri</i> , (Brown) Meek.....             | 39 |
| <i>Modiola pertenuis</i> , M. & H. = <i>Volzella pertenuis</i> , (M. & H.) Meek.....               | 40 |
| <i>Modiola (Perna) formosa</i> , M. & H. = <i>Volzella formosa</i> , (M. & H.) Meek.....           | 40 |
| <i>Venus unionides</i> , Rømer = <i>Myacites unionoides</i> , (Rømer) Meek.....                    | 40 |
| <i>Neritina nebrascensis</i> , Meek = <i>Neritella nebrascensis</i> , M. & H.....                  | 40 |
| <i>Lioplacodes</i> , Meek.....                                                                     | 40 |
| <i>Melania (Potadoma) veterna</i> , M. & H. = <i>Lioplacodes veterna</i> , (M. & H.) Meek.....     | 40 |

46.

MEK, F. B. Check lists of the Invertebrate fossils of North America. Miocene. <Smithsonian Miscellaneous Collections (No. 183), pp. 1-32, 1864. Washington, 1867.

Contains, besides the list, "Notes and explanations" of generic and specific characters.

MIOCENE.

|                                                                                                                     | Page. |
|---------------------------------------------------------------------------------------------------------------------|-------|
| <i>Columnaria</i> ? <i>sextiradiata</i> , Lonsdale = <i>Septastrea</i> (?) <i>sextiradiata</i> , (Lonsd.) Meek..... | 25    |
| <i>Lithodendron lineata</i> , Conrad = <i>Cladocora</i> (?) <i>lineata</i> , (Con.) Meek.....                       | 25    |
| <i>Orbicula lugubris</i> , Conrad = <i>Diacina lugubris</i> , (Con.) Meek.....                                      | 25    |
| <i>Orbicula multilinea</i> , Conrad = <i>Diacina multilinea</i> , (Con.) Meek.....                                  | 25    |
| <i>Terebratula nitens</i> , Conrad = <i>Rhynchonella nitens</i> , (Con.) Meek.....                                  | 25    |
| <i>Hinnites giganteus</i> , Gray = <i>Hinnites crassus</i> , Conrad.....                                            | 26    |
| <i>Janira affinis</i> , Tuomey & Holmes = <i>Pecten affinis</i> , (T. & H.) Meek.....                               | 26    |
| <i>Janira bella</i> , Conrad = <i>Pecten bella</i> , (Con.) Meek.....                                               | 26    |
| <i>Amusium propatulum</i> = <i>Pecten propatulus</i> , Conrad.....                                                  | 26    |
| <i>Nucula impressa</i> , Conrad = <i>Yoldia impressa</i> , (Con.) Meek.....                                         | 27    |
| <i>Leda willamettensis</i> , Shumard = <i>Nuculana willamettensis</i> , (Shum.) Meek.....                           | 27    |
| <i>Nucula penita</i> , Conrad = <i>Nuculana penita</i> , (Con.) Meek.....                                           | 27    |
| <i>Leda oregon</i> , Shumard = <i>Nuculana oregon</i> , (Shum.) Meek.....                                           | 27    |

|                                                                                                              | Page. |
|--------------------------------------------------------------------------------------------------------------|-------|
| <i>Nucula divaricata</i> , Conrad = <i>Nucula (Acila) Conradi</i> , Meek .....                               | 27    |
| <i>Pectunculus nitens</i> , Conrad = <i>Limopsis nitens</i> , (Con.) Meek .....                              | 27-28 |
| <i>Arca canalis</i> , Conrad = <i>Anadara ? canalis</i> , (Con.) Meek .....                                  | 28    |
| <i>Arca congesta</i> , Conrad = <i>Anadara ? congesta</i> , (Con.) Meek .....                                | 28    |
| <i>Arca incile</i> , Say = <i>Anadara incile</i> , (Say) Meek .....                                          | 28    |
| <i>Arca microdonta</i> , Conrad = <i>Anadara microdonta</i> , (Con.) Meek .....                              | 28    |
| <i>Anomalocardia triginaria</i> , Conrad = <i>Anadara triginaria</i> , (Con.) Meek .....                     | 28    |
| <i>Arca protracta</i> , H. D. & W. B. Rogers = <i>Anadara protracta</i> , (Rogers) Meek .....                | 28    |
| <i>Arca trilineata</i> , Conrad = <i>Anadara trilineata</i> , (Con.) Meek .....                              | 28    |
| <i>Avicula multangula</i> , H. C. Lea = <i>Pteria</i> [?] <i>multangula</i> , (H. C. Lea) Meek .....         | 28    |
| <i>Perna montana</i> , Conrad = <i>Melina montana</i> , (Con.) Meek .....                                    | 28    |
| <i>Perna t[er]ta</i> , Say = <i>Melina torta</i> , (Say) Meek .....                                          | 28    |
| <i>Modiola contracta</i> , Conrad = <i>Volvella contracta</i> , (Conrad) Meek .....                          | 28    |
| <i>Modiola spiniger</i> , H. C. Lea = <i>Volvella</i> [?] <i>spinigera</i> , (H. C. Lea) Meek .....          | 28    |
| <i>Modiola ducetelli</i> , Conrad = <i>Volvella ducetelli</i> , (Conrad) Meek .....                          | 28    |
| <i>Mytilus inflatus</i> , Tuomey & Holmes = <i>Volvella inflata</i> , (T. & H.) Meek .....                   | 28    |
| <i>Cardita abbreviata</i> , Conrad = <i>Venericardia (Pteromeris) abbreviata</i> , (Con.) Meek .....         | 28    |
| <i>Cardita radiana</i> , Conrad = <i>Venericardia (Pteromeris) radiana</i> , (Con.) Meek .....               | 28    |
| <i>Cardita carinata</i> , Emmons = <i>Venericardia (Cardiocardites) carinata</i> , (Emm.) Meek .....         | 28    |
| <i>Cardita sublentia</i> , Conrad = <i>Venericardia (Cardiocardites) sub[?]lentia</i> , (Con.) Meek .....    | 28    |
| <i>Cardita monilicosta</i> , Gabb. = <i>Venericardia (Cardiocardites) monilicosta</i> , (Gabb.) Meek .....   | 28    |
| <i>Cardita occidentalis</i> , Conrad = <i>Venericardia (Cardiocardites) occidentalis</i> , (Con.) Meek ..... | 28    |
| <i>Lucina occidentalis</i> , Conrad .....                                                                    | 28    |
| <i>Ocydas permaera</i> , Conrad = <i>Lucina permaera</i> , (Con.) Meek .....                                 | 28    |
| <i>Venus bisecta</i> , Conrad = <i>Thyatira ? bisecta</i> , (Conrad) Meek .....                              | 29-30 |
| <i>Isocondria fraterna</i> , Say = <i>Glossus fraterna</i> , (Say) Meek .....                                | 30    |
| <i>Isocondria markoi</i> , Conrad = <i>Glossus markoi</i> , (Conrad) Meek .....                              | 30    |
| <i>Cardium modestum</i> , Conrad = <i>(Cerastoderma) modestum</i> , Conrad .....                             | 30    |
| <i>Venus (Trigona) tantilla</i> , Gould = <i>Peephis tantilla</i> , (Gould) Gabb .....                       | 30    |
| <i>Venus athleta</i> , Conrad = <i>Chione (Lirophora) athleta</i> , (Con.) Meek .....                        | 30    |
| <i>Venus alveata</i> , Conrad = <i>Chione (Lirophora) alveata</i> , (Con.) Meek .....                        | 30    |
| <i>Venus latilirata</i> , Conrad = <i>Chione (Lirophora) latilirata</i> , (Con.) Meek .....                  | 30    |
| <i>Venus angustifrons</i> , Conrad = <i>Dione angustifrons</i> , (Con.) Meek .....                           | 30    |
| <i>Venus brevilineata</i> , Conrad = <i>Dione ? brevilineata</i> , (Con.) Meek .....                         | 30    |
| <i>Meretrix d-eia</i> , Conrad = <i>Dione decisa</i> , (Conrad) Meek .....                                   | 30    |
| <i>Oythera oregonensis</i> , Conrad = <i>Dione oregonensis</i> , (Con.) Meek .....                           | 30    |
| <i>Meretrix tularana</i> , Conrad = <i>Dione tularana</i> , (Con.) Meek .....                                | 30    |
| <i>Meretrix unioemeris</i> , Conrad = <i>Dione unioemeris</i> , (Con.) Meek .....                            | 30    |
| <i>Oythera vespertina</i> , Conrad = <i>Dione vespertina</i> , (Con.) Meek .....                             | 30    |
| <i>Solemya proteiza</i> = <i>Donax proteiza</i> , Conrad .....                                               | 30    |
| <i>Glycymeris estrellana</i> , Conrad = <i>Panopæa estrellana</i> , (Con.) Meek .....                        | 30    |
| <i>Solen curtus</i> , Conrad = <i>Ensis curtus</i> , (Conrad) Meek .....                                     | 31    |
| <i>Bulla petrosa</i> , Conrad = <i>Cylichna petrosa</i> , (Conrad) Meek .....                                | 31    |
| <i>Tornatella elliptica</i> , Trask = <i>Actæon ellipticus</i> , (Trask) Meek .....                          | 31    |
| <i>Helonyx thallus</i> , (Conrad) Meek = <i>Dentalium thallus</i> , Conrad .....                             | 31    |
| <i>Diodora crucibuliformis</i> , Conrad = <i>Osmoria crucibuliformis</i> , Conrad .....                      | 31    |
| <i>Narica diegoana</i> , Conrad = <i>Vanikoro diegoana</i> , (Con.) Meek .....                               | 31    |
| <i>Orepidula prærupta</i> , Conrad = <i>Crypta prærupta</i> , (Con.) Meek .....                              | 31    |
| <i>Turbo glabra</i> , H. C. Lea = <i>Viviparus glaber</i> , (H. C. Lea) Meek .....                           | 31    |
| <i>Natica inezana</i> , Conrad = <i>Natica inezana</i> , Conrad .....                                        | 31    |
| <i>Sinum scopulosum</i> , Meek ? = <i>Sigaretus scopulosus</i> , Conrad .....                                | 31-32 |
| <i>Sycotypus ocoyanus</i> , Conrad = <i>Ficus</i> [?] <i>ocoyanus</i> , (Conrad) Meek .....                  | 32    |
| <i>Pyrula modesta</i> , Conrad = <i>Ficus modestus</i> , (Conrad) Meek .....                                 | 32    |
| <i>Olivella ancillariiformis</i> , H. C. Lea = <i>Olivella ancillariiformis</i> , (H. C. Lea) Meek .....     | 32    |
| <i>Fusus Oregonensis</i> , Conrad = <i>Busycon ? Oregonensis</i> , (Conrad) Meek .....                       | 32    |
| <i>Colus arcatus</i> , Conrad = <i>Fusus arcatus</i> , (Conrad) Meek .....                                   | 32    |
| <i>Fusus migrans</i> , Conrad = <i>Tritonifusus migrans</i> , (Con.) Meek .....                              | 32    |
| <i>Nautilus angustatus</i> , Conrad = ? <i>Aturia angustatus</i> , (Con.) Meek .....                         | 32    |

MEEK, F. B. Note on *Bellinurus Danae*, from the Illinois Coal-measures. <Am. Journ. Sci., vol. xliii, 2d ser., pp. 257, 258. 1867. New Haven, 1867.

In this note the author expresses the opinion that *Bellinurus danae*, Meek and Worthen, properly belongs to the recently proposed genus *Prestwichia*, Woodward.

48.

MEK, F. B. Note on a new genus of fossil Crustacea. <Am. Journ. Sci., vol. xliii, 2d ser., pp. 394, 395. 1867. New Haven, 1867.

Genus Eupröpa. This genus was afterward fully described and illustrated in vol. iii of Worthen's Illinois Geological Reports.

49.

MEK, F. B. On the punctate shell-structure of Syringothyris. <Am. Journ. Sci., vol. xliii, 2d ser., pp. 407, 408. 1867. New Haven, 1867.

50.

MEK, F. B. Remarks on Professor Geinitz's views respecting the Upper Paleozoic rocks and Fossils of Southeastern Nebraska. <Am. Journ. Sci., vol. xliii, 2d ser., pp. 170-187; continued, pp. 327-339; notes to the same pp. 282, 283. 1867. New Haven, 1867.

This is an extended discussion and criticism of Dr. Geinitz's "Carbon formation und Dyas in Nebraska." The following fossils are discussed especially:

|                                                             | Page    |
|-------------------------------------------------------------|---------|
| <i>Serpula (Spirorbis) planorbites</i> , Münster.....       | 177     |
| <i>Euomphalus rugosus</i> , Hall.....                       | 177     |
| <i>Spirorbis hekei</i> , King.....                          | 178     |
| <i>Murchisonia subtriata</i> , Geinitz.....                 | 178     |
| <i>Orthonema subtriata</i> , Geinitz, sp.....               | 178     |
| <i>Bellerophon interlineatus</i> , Portlock.....            | 178     |
| <i>Bellerophon marcesuanus</i> , Geinitz.....               | 178     |
| <i>Macrochelus pallianus</i> , Geinitz.....                 | 178     |
| <i>Allorisma elegans</i> , King.....                        | 178     |
| <i>Solenomya biarmica</i> , de Verneuil.....                | 178-179 |
| <i>Astarte gibbosa</i> , McCoy.....                         | 179     |
| <i>Astarte nebrascensis</i> , Geinitz.....                  | 179     |
| <i>Astarte mortoniensis</i> , Geinitz.....                  | 179     |
| <i>Astarte vallmerianus</i> , King.....                     | 179     |
| <i>Schizodus obscurus</i> , Sowerby.....                    | 179     |
| <i>Schizodus rossicus</i> , de Verneuil.....                | 179     |
| <i>Arca striata</i> , Schlotheim.....                       | 179-180 |
| <i>Macrodon tenuistriata</i> , M. & W.....                  | 179-180 |
| <i>Nucula kazaniensis</i> , de Verneuil.....                | 180     |
| <i>Leda bellistriata</i> , Stevens.....                     | 180     |
| <i>Nucula beyrichi</i> , Schlotheim.....                    | 180     |
| <i>Chidophorus pallasi</i> , M. V. & King.....              | 180-181 |
| <i>Chidophorus (Pleuraphorus) simplex</i> , Keyserling..... | 181     |
| <i>Pleuraphorus subcuneatus</i> , M. & H.....               | 181     |
| <i>Chidophorus solenoides</i> , Geinitz.....                | 181     |
| <i>Aucella Hausmanni</i> (Goldf.), Geinitz.....             | 182     |
| <i>Myalina swallowi</i> , McChesney.....                    | 182     |
| <i>Mytilus concavus</i> ? (Swallow), Geinitz.....           | 182     |
| <i>Myalina porattenuata</i> (M. & H.), Geinitz.....         | 182     |
| <i>Myalina subquadrata</i> (Shumard), Geinitz.....          | 182     |
| <i>Avicula speluncaria</i> (Schlotheim), Geinitz.....       | 182     |
| <i>Monotis hawni</i> , M. & H.....                          | 182     |
| <i>Pseudomonotis hawni</i> , M. & H.....                    | 182     |
| <i>Pseudomonotis sinuata</i> .....                          | 182     |
| <i>Avicula pinnaformis</i> , Geinitz.....                   | 182     |
| <i>Gervillia parva</i> (M. & H.), Geinitz.....              | 182-183 |
| <i>Gervillia longa</i> , Geinitz.....                       | 183     |
| <i>Gervillia (avicula) sulcata</i> , Geinitz.....           | 183     |
| <i>Pecten neglectus</i> , Geinitz.....                      | 183     |
| <i>Pecten Missourianus</i> ? (Shumard), Geinitz.....        | 183     |
| <i>Pecten hawni</i> , Geinitz.....                          | 183     |
| <i>Pecten broadheadii</i> , Swallow.....                    | 183     |
| <i>Aviculopeecten hawni</i> .....                           | 183     |

|                                                           |     |
|-----------------------------------------------------------|-----|
| <i>Rhynchonella angulata</i> , (Linnæus), Geinitz.....    |     |
| <i>Camaropharia globulina</i> , (Phillips), Geinitz.....  |     |
| <i>Rhynchonella uta</i> , Maroon.....                     |     |
| <i>Retzia mormonit</i> (Maroon sp.), Geinitz.....         |     |
| <i>Athyris subtilita</i> , Hall.....                      |     |
| <i>Spirifer moosakaliensis</i> , Davidson.....            |     |
| <i>Spirifer cameratus</i> (Morton), Geinitz.....          |     |
| <i>Spirifer laminosus</i> (McCoy), Geinitz.....           |     |
| <i>Spiriferina kentuckensis</i> , Shumard.....            |     |
| <i>Orthisina missouriana</i> , Swallow.....               |     |
| <i>Plicatula striato-costata</i> , Cox.....               |     |
| <i>Productus horreocens</i> .....                         |     |
| <i>Productus rogersii</i> .....                           |     |
| <i>Productus nebrascensis</i> , Owen.....                 |     |
| <i>Productus flemingii</i> .....                          |     |
| <i>Productus prattensis</i> , Norwood.....                |     |
| <i>Productus koninckianus</i> (de Verneuil), Geinitz..... |     |
| <i>Productus cancrini</i> (de Verneuil), Geinitz.....     |     |
| <i>Productus orbignianus</i> (de Koninck), Geinitz.....   |     |
| <i>Productus longispinus</i> , Sowerby.....               |     |
| <i>Productus horridus</i> (Sowerby), Geinitz.....         |     |
| <i>Chonetes mucronata</i> (M. & W.), Geinitz.....         |     |
| <i>Chonetes glabra</i> , Geinitz.....                     |     |
| <i>Cyathocrinus ramosus</i> (Schlotheim), Geinitz.....    |     |
| <i>Cyathocrinus inflexus</i> , Geinitz.....               |     |
| <i>Potriocrinus hemisphericus</i> , Shumard.....          |     |
| <i>Eosideris hallianus</i> , Geinitz.....                 |     |
| <i>Polypora marginata</i> (McCoy), Geinitz.....           |     |
| <i>Polypora biarmica</i> (Keyserling), Geinitz.....       |     |
| <i>Syncladia virgulacea</i> (Phillips), Geinitz.....      |     |
| <i>Aviculopinna pinnaformis</i> .....                     |     |
| <i>Aviculopinna Americana</i> , n. s., Meek, 1867.....    |     |
| <i>Cyathozonia</i> .....                                  |     |
| <i>Allorisma elegans</i> , Kling.....                     |     |
| <i>Schizodus rossicus</i> , de Verneuil.....              |     |
| <i>Aucella hausmanni</i> , Goldf.....                     |     |
| <i>Spirifer laminosus</i> , McCoy.....                    |     |
| <i>Lima retifera</i> , Shumard.....                       |     |
| <i>Stenophora columnaris</i> , Schlot., sp.....           | 329 |
| <i>Syncladia virgulacea</i> , Geinitz, not Phillips.....  |     |
| <i>Syncladia biserialis</i> , Swallow.....                |     |

## 51.

MEEK, F. B. Note on the genus *Palæacis*, Haime, 1860 (= *Sphenopoterium*, M W., 1866.) <Am. Journ. Sci., vol. xlv, 2d ser., pp. 419, 420. 1867. New Hav 1867.

The author here takes the view that *Sphenopoterium*, originally published in the III Geol. Reports, is identical with *Palæacis*.

P

|                                         |     |
|-----------------------------------------|-----|
| <i>Palæacis obtusa</i> , M. & W.....    | 411 |
| <i>Palæacis umbonata</i> , Seebach..... |     |
| <i>Palæacis gymbia</i> , Seebach.....   |     |

## 52.

MEEK, F. B. Fossils from the west coast of Kennedy Channel. <Hayes's "O Polar Ocean," London, 1867, p. 341.

Describes various fossils collected by Dr. Hayes on the west coast of Kennedy's Cha from deposits of lower Helderberg age. *Zaphrentis hayesi* and *Loxonema ? kanei* are desc as new species. A preliminary notice appeared in Am. Journ. Sci. and Arts, ser. 2, vo pp. 31-34. New Haven, 1865.

For list of species see entry number 33, p. 36.



53.

MEEK, F. B. Preliminary notice of a remarkable new genus of corals, probably typical of a new family; forwarded for study by Prof. J. D. Whitney, from the Silurian rocks of Nevada Territory. <Am. Journ. Sci., vol. xlv, 2d ser., pp. 62-64. 1868. New Haven.

|                                                        | Page. |
|--------------------------------------------------------|-------|
| <i>Ethmophyllum</i> , n. g., Meek, 1868.....           | 62-64 |
| <i>Ethmophyllum whitneyi</i> , n. s., Meek, 1868.....  | 64    |
| <i>Ethmophyllum gracile</i> , n. s., ! Meek, 1868..... | 64    |

54.

MEEK, F. B. Note on the shell-structure and family affinities of the genus *Aviculopecten*. <Am. Journ. Sci., vol. xlv, 2d ser., pp. 64, 65. 1868. New Haven, 1868.

The author shows that by the shell-structure the *Aviculopectens* are allied to *Avicula* rather than to *Pecten*.

55.

MEEK, F. B., and WORTHEN, A. H. Preliminary notice of a Scorpion, a *Eurypterus*? and other fossils, from the Coal-measures of Illinois. <Am. Jour. Sci., vol. xlv, 2d ser., pp. 19-28. 1868. New Haven, 1868.

Afterward fully described and illustrated in one of the Illinois Geological Reports, vol. iii.

|                                                                                           | Page. |
|-------------------------------------------------------------------------------------------|-------|
| <i>Eurypterus</i> ( <i>Anthracopterus</i> ) <i>mazonensis</i> , n. s., M. & W., 1868..... | 19-21 |
| <i>Adelophthalmus mazonensis</i> !                                                        | 22    |
| <i>Ceratiocaris</i> ? <i>sinuatus</i> , n. s., M. & W., 1868.....                         | 22    |
| <i>Buthus</i> ?? <i>carbonarius</i> , n. s., M. & W., 1868.....                           | 22-24 |
| <i>Scorpio carbonarius</i> , n. s., M. & W., 1868.....                                    | 22-24 |
| <i>Eoscorpius</i> , n. g. ! M. & W., 1868.....                                            | 24-25 |
| <i>Euphoberia</i> , n. g., M. & W., 1868.....                                             | 25-26 |
| <i>Euphoberia armigera</i> , n. s., M. & W., 1868.....                                    | 26    |
| <i>Euphoberia major</i> , n. s., M. & W., 1868.....                                       | 26    |
| <i>Acanthotelson</i> .....                                                                | 27-28 |
| <i>Acanthotelson eventi</i> , n. s., M. & W., 1868.....                                   | 28    |
| <i>Paleocaris</i> .....                                                                   | 28    |
| <i>Gampeonys</i> .....                                                                    | 28    |
| <i>Anthracorpes</i> .....                                                                 | 28    |

56.

MEEK, F. B. Note on *Ethmophyllum* and *Archeocyathus*. <Am. Journ. Sci., vol. xlv, 2d ser., p. 144. 1868. New Haven, 1868.

The author abandons his formerly proposed genus *Ethmophyllum*, believing it to be identical with *Archeocyathus* of Billings.

57.

MEEK, F. B., and WORTHEN, A. H. Notes on some points in the Structure and Habits of the Paleozoic Crinoidea. <Proc. Acad. Nat. Sci. Phila., vol. xx, pp. 323-334. 1868. Philadelphia, 1868.

Afterward republished in the Illinois Geological Reports, vol. v, and in Amer. Jour. Sci. and Canad. Nat. See entries Nos. 61 and 64.

|                                                                              | Page.   |
|------------------------------------------------------------------------------|---------|
| <i>Synbathocrinus</i> , Phillips.....                                        | 323     |
| <i>Goniasteroidocrinus</i> , Lyon & Casseday.....                            | 323-324 |
| <i>Oyathocrinus</i> , Miller.....                                            | 324-325 |
| Convolution of the digestive sack, in the <i>Actinocrinidae</i> .....        | 325-327 |
| Ambulacral canals passing under the vault of the <i>Actinocrinidae</i> ..... | 327-334 |

## 58.

MEEK, F. B., and WORTHEN, A. H. Remarks on some types of Carboniferous Crinoidea, with descriptions of new Genera and Species of the same, and of one Echinoid. <Proc. Acad. Nat. Sci. Phila., vol. xx, pp. 335-359. 1868. Philadelphia, 1868.

Genera Barycrinus, Nipteroorinus. Afterward republished in the Illinois Geological Reports, vol. v.

|                                                                                           | Page.   |
|-------------------------------------------------------------------------------------------|---------|
| <i>Cyathocrinites</i> , Miller.....                                                       | 336-337 |
| <i>Oyathocrinites fragilis</i> , n. s., M. & W., 1868.....                                | 337     |
| <i>Oyathocrinites tenuidactylus</i> , n. s., M. & W., 1868.....                           | 337-338 |
| <i>Barycrinus</i> ,* n. g., Wachsmuth MS.....                                             | 338-340 |
| <i>Barycrinus magnificus</i> , n. s., M. & W., 1868.....                                  | 340-341 |
| <i>Barycrinus hoveyi</i> var. <i>herculeus</i> , M. & W., 1868.....                       | 341     |
| <i>Nipteroorinus</i> ,† n. g., Wachsmuth, MS.....                                         | 341-342 |
| <i>Nipteroorinus wachsmuthi</i> , n. s., M. & W., 1868.....                               | 342-343 |
| <i>Catillocrinus</i> , Troost.....                                                        | 343     |
| <i>Catillocrinus bradleyi</i> , n. s., M. & W., 1868.....                                 | 343     |
| <i>Dichocrinus</i> , Munster.....                                                         | 343     |
| <i>Dichocrinus expansus</i> , n. s., M. & W., 1868.....                                   | 343-344 |
| <i>Dorycrinus</i> , Roemer.....                                                           | 344-345 |
| <i>Dorycrinus roemeri</i> , n. s., M. & W., 1868.....                                     | 345     |
| <i>Dorycrinus quinquelobus</i> , var. <i>intermedius</i> , M. & W., 1868.....             | 345-347 |
| <i>Amphocrinus</i> , Austin.....                                                          | 347-348 |
| <i>Amphocrinus divergens</i> , Hall, sp., 1860.....                                       | 348-349 |
| <i>Batoerinus</i> , Casseday.....                                                         | 349-352 |
| Subgenus <i>Eretmoerinus</i> , Lyon & Casseday.....                                       | 351     |
| Subgenus <i>Alloprosallocrinus</i> , Casseday & Lyon.....                                 | 352     |
| <i>Batoerinus quasillus</i> , n. s., M. & W., 1868.....                                   | 352-353 |
| <i>Batoerinus cassedayanus</i> , n. s., M. & W., 1868.....                                | 353-354 |
| <i>Batoerinus trochiscus</i> , n. s., M. & W., 1868.....                                  | 354-355 |
| <i>Batoerinus</i> ( <i>Eretmoerinus</i> ) <i>neglectus</i> , n. s., M. & W., 1868.....    | 355-356 |
| <i>Pentremites</i> , Say.....                                                             | 356     |
| <i>Pentremites</i> ( <i>Troostocrinus</i> !) <i>woodmani</i> , n. s., M. & W., 1868.....  | 356     |
| <i>Agelacrinites</i> Vanuxem.....                                                         | 357     |
| <i>Agelacrinites</i> ( <i>Lepidodiscus</i> ) <i>squamosus</i> , n. s., M. & W., 1868..... | 357-358 |
| Echinoides.....                                                                           | 358     |
| <i>Oligoporus</i> , M. & W.....                                                           | 358     |
| <i>Oligoporus nobilis</i> , n. s., M. & W., 1868.....                                     | 358-359 |

## 59.

MEEK, F. B., and WORTHEN, A. H. Paleontology. <Geological Survey of Illinois, vol. iii, pp. 291-565, plates 1-20. 1868. Springfield, 1868.

Published by authority of the legislature of Illinois, 1868.  
Silurian, Devonian, and Carboniferous.

## LOWER SILURIAN SPECIES.

|                                                                                      | TRENTON GROUP. | Page.   |
|--------------------------------------------------------------------------------------|----------------|---------|
| <i>Radiata</i> .....                                                                 |                | 291     |
| <i>Echinodermata</i> .....                                                           |                | 291     |
| <i>Oystoidea</i> .....                                                               |                | 291     |
| <i>Comarocystites</i> , Billings, 1854.....                                          |                | 291     |
| <i>C. shumardi</i> , M. & W., 1865, fig. —, p. 292, and pl. 1, figs. 1 a, b.....     |                | 292-294 |
| <i>C. shumardi</i> , var. <i>obconicus</i> , M. & W., 1865, pl. 1, figs. 2 a, b..... |                | 294     |
| <i>Mollusca</i> .....                                                                |                | 294     |
| <i>Lamelibranchiata</i> .....                                                        |                | 294     |
| <i>Modiolopsis</i> , Hall, 1847.....                                                 |                | 294     |
| <i>M. modioliformis</i> , n. s., M. & W., 1868, pl. 1, figs. 7 b and 8.....          |                | 294-295 |
| <i>M. orthonota</i> , n. s., M. & W., 1868, pl. 1, fig. 7 a.....                     |                | 295-296 |
| <i>Cypricardites</i> , Conrad, 1841.....                                             |                | 297     |
| <i>Vanuxemia</i> , Billings, 1858.....                                               |                | 297     |
| <i>V. ? dizonensis</i> , M. & W., 1866, pl. 1, figs. 5 a, b.....                     |                | 297-298 |

\*s, heavy; Kρίνον, a lily.

†μυρτίον, a washing vessel; Kερον, a lily.

|                                                                                                            | Page.   |
|------------------------------------------------------------------------------------------------------------|---------|
| <i>Cephalopoda</i> .....                                                                                   | 296     |
| <i>Orthoceras</i> , Auct .....                                                                             | 296     |
| <i>O. (Ormoceras) backii</i> , Stokes† 1837, pl. i, fig. 4.....                                            | 296-299 |
| <i>Articulata</i> :                                                                                        |         |
| <i>Crustacea</i> .....                                                                                     | 299     |
| <i>Lichas</i> , Dalman, 1837 .....                                                                         | 299     |
| <i>L. ocululus</i> , M. & W, 1865 .....                                                                    | 299-300 |
| FOSSILS OF THE GALENA BEDS.                                                                                |         |
| <i>Protozoa</i> .....                                                                                      | 301     |
| <i>Receptaculites</i> , DeFrance, 1827 .....                                                               | 301     |
| <i>R. globularis</i> , Hall, 1861, pl. ii, figs. 2 a, b .....                                              | 301     |
| <i>R. ———</i> ? pl. ii, figs. 1 a, b .....                                                                 | 301-302 |
| <i>R. oweni</i> , Hall, 1861, pl. ii, fig. 3 .....                                                         | 302-303 |
| <i>Radiata</i> .....                                                                                       | 304     |
| <i>Zoophyta</i> .....                                                                                      | 304     |
| ? <i>Chastetes</i> , Fischer, 1837 .....                                                                   | 304     |
| <i>C. petropositanus</i> , Pander† sp., 1830, pl. ii, figs. 8 a, b .....                                   | 304-305 |
| <i>Mollusca</i> .....                                                                                      | 305     |
| <i>Brachiopoda</i> .....                                                                                   | 305     |
| <i>Lingula</i> , Brugiere, 1792 .....                                                                      | 305     |
| <i>L. quadrata</i> , Eichwald, 1839, pl. ii, fig. 4 a-c .....                                              | 305-306 |
| <i>Lamellibranchiata</i> .....                                                                             | 306     |
| <i>Ambyonchis</i> , Hall, 1847 .....                                                                       | 306     |
| <i>A. intermedia</i> , n. s., M. & W., 1868, pl. ii, figs. 5 a, b .....                                    | 306-307 |
| <i>Tellinomya</i> , Hall, 1847 (not <i>Tellina</i> , Brown, 1827= <i>Tellinomya</i> , Agassiz, 1846) ..... | 307     |
| <i>T. ventricosa</i> , Hall, 1861, pl. ii, figs. 7 a, b, c .....                                           | 307-308 |
| <i>T. alta</i> , Hall, 1861, pl. ii, figs. 6 a, b .....                                                    | 309     |
| <i>Oypircardites</i> , Conrad, 1841 .....                                                                  | 309-310 |
| <i>C. ———</i> ? pl. iii, figs. 9 a, b, c, d .....                                                          | 311     |
| <i>C. obliquus</i> , n. s., M. & W., 1868, pl. ii, figs. 9 a, b .....                                      | 311-312 |
| <i>Gastropoda</i> .....                                                                                    | 312     |
| <i>Bellerophon</i> , Montfort, 1808 .....                                                                  | 312     |
| <i>B. (Buconia?) platystoma</i> , n. s., M. & W., 1868, pl. iii, figs. 8 a, b .....                        | 312-313 |
| <i>Ophileta</i> , Vanuxem, 1842 .....                                                                      | 313     |
| <i>O. oregonana</i> , n. s., M. & W., 1868, pl. iii, figs. 6 a, b .....                                    | 313-314 |
| <i>Trochonema</i> , Salter, 1857 .....                                                                     | 314     |
| <i>T. umbilicata</i> , Hall† sp., 1847, pl. iii, figs. 5 a, b .....                                        | 314-315 |
| <i>Raphistoma</i> , Hall, 1847 .....                                                                       | 316     |
| <i>R. lenticularis</i> , Conrad, sp., 1842, pl. iii, figs. 7 b, (a, c) .....                               | 316-317 |
| <i>Murchisonia</i> , d'Archiac & d'Verneuil, 1841 .....                                                    | 317     |
| <i>M. bicincta</i> , Hall† 1847, pl. iii, fig. 4 .....                                                     | 317-318 |
| <i>Cephalopoda</i> .....                                                                                   | 318     |
| <i>Orthoceras</i> , Auct .....                                                                             | 318     |
| <i>O. anellum</i> , Conrad, 1842, pl. iii, fig. 3 .....                                                    | 318-320 |
| <i>Articulata</i> .....                                                                                    | 320     |
| <i>Crustacea</i> .....                                                                                     | 320     |
| <i>Illeenus</i> , Dalman, 1826 .....                                                                       | 320     |
| <i>I. taurus</i> , Hall, 1861, pl. iii, fig. 2 .....                                                       | 320-322 |
| <i>I. crassicauda</i> , Wahlenb.†† 1821, pl. iii, figs. 1 a, b .....                                       | 322-323 |
| FOSSILS OF THE CINCINNATI GROUP.                                                                           |         |
| <i>Radiata</i> .....                                                                                       | 324     |
| <i>Echinodermata</i> .....                                                                                 | 324     |
| <i>Orinoidea</i> .....                                                                                     | 324     |
| <i>Heterocrinus</i> , Hall, 1847 .....                                                                     | 324     |
| <i>H. crassus</i> , M. & W., 1865, pl. iv, figs. 1 a, b, c .....                                           | 324-325 |
| <i>H. subcrassus</i> , M. & W., 1865, pl. iv, figs. 5 a-d .....                                            | 325-326 |
| <i>Hyboocrinus</i> , Billings, 1866 .....                                                                  | 327     |
| Subgenus <i>Anomalocrinus</i> , M. & W .....                                                               | 328     |
| <i>Hyboocrinus? incurvus</i> , M. & W., 1865, pl. iv, figs. 3 a, b, and p. 327, fig. — .....               | 327-329 |
| <i>Porocrinus</i> , Billings, 1856 .....                                                                   | 329-330 |
| <i>P. crassus</i> , M. & W., 1865, p. 330, fig. a, b, and pl. iv, figs. 2 a, b .....                       | 330-332 |
| <i>P. pentagonius</i> , M. & W., 1865, pl. i, fig. 3 .....                                                 | 332-333 |
| <i>Dendrocrinus</i> , Hall, 1852 .....                                                                     | 333     |
| <i>D. onsegoënsis</i> , n. s., M. & W., 1868, p. 333, fig. —, and pl. iv, fig. 4 .....                     | 333-334 |

|                                                                          | Pa  |
|--------------------------------------------------------------------------|-----|
| <b>Mollusca</b> .....                                                    |     |
| <b>Brachiopoda</b> .....                                                 |     |
| <i>Strophomena</i> , Rafinesque, 1820 ? .....                            |     |
| <i>S. unicostata</i> , n. s., M. & W., 1868, pl. iv, figs. 11 a, b. .... | 335 |
| <b>Lamellibranchiata</b> .....                                           |     |
| <i>Ambonychia</i> , Hall, 1847 .....                                     |     |
| Subgenus <i>Megaptera</i> , M. & W., 1866 .....                          |     |
| <i>Megaptera cassi</i> , M. & W., 1866, pl. iv, figs. 9 a, b. ....       | 337 |
| <i>Dolabra</i> , McCoy, 1844 .....                                       |     |
| <i>D. sterlingensis</i> , M. & W., 1866, pl. iv, figs. 10 a, b, c. ....  | 339 |
| <b>Gasteropoda</b> .....                                                 |     |
| <i>Cyrtolites</i> , Conrad, 1838 .....                                   |     |
| <i>C. imbricatus</i> , n. s., M. & W., 1868, pl. iv, fig. 12. ....       | 340 |
| <b>Pteropoda</b> .....                                                   |     |
| <i>Tentaculites</i> , Schlottheim, 1820 .....                            |     |
| <i>T. tenuistriatus</i> , M. & W., 1865, pl. iv, figs. 7 a, b. ....      | 341 |
| <i>T. oregonensis</i> , M. & W., 1865, pl. iv, fig. 6 c. ....            | 342 |
| <i>T. sterlingensis</i> , M. & W., 1865, pl. iv, fig. 8. ....            |     |

## UPPER SILURIAN SPECIES.

## FOSSILS OF THE NIAGARA GROUP.

|                                                                                                 |     |
|-------------------------------------------------------------------------------------------------|-----|
| <b>Protozoa</b> .....                                                                           |     |
| <b>Spongia</b> .....                                                                            |     |
| <i>Asylospongia</i> , Rømer .....                                                               |     |
| <i>A. ? christiani</i> , n. s., M. & W., 1868, pl. v, figs. 3 a, b, c. ....                     | 344 |
| <i>Pascoculus</i> , Billings, 1863 .....                                                        |     |
| <i>P. ? dactylioides</i> , Owen, sp., 1844, pl. v, figs. 2 a, b, c. ....                        | 345 |
| <b>Radiata</b> .....                                                                            |     |
| <b>Echinodermata</b> .....                                                                      |     |
| <i>Saccocarinus</i> , Hall, 1852 .....                                                          |     |
| <i>S. christyi</i> , Hall ? sp., 1863, pl. v, fig. 1. ....                                      | 347 |
| <b>Mollusca</b> .....                                                                           |     |
| <b>Brachiopoda</b> .....                                                                        |     |
| <i>Hemipronites</i> , Pander, 1830 .....                                                        |     |
| <i>H. subplanus</i> , Conrad ? sp., 1842, pl. vi, figs. 6 a, b. ....                            | 348 |
| <i>Obolus</i> , Eichwald, 1829 .....                                                            |     |
| <i>O. [Trimerella ?] conradi</i> , Hall, 1868, pl. v, figs. 7 a, b. ....                        | 351 |
| <i>Centronella</i> , Billings, 1859 .....                                                       |     |
| <i>O. billingsiana</i> , n. s., M. & W., 1868, p. 352, figs. a-c, and pl. vi, figs. 5 a-c. .... | 352 |
| <i>Meristella</i> , Hall, 1860 .....                                                            |     |
| <i>Meristella ?</i> sp., pl. vi, figs. 4 a, b. ....                                             |     |
| <b>Lamellibranchiata</b> .....                                                                  |     |
| <i>Pterinea</i> , Goldfuss, 1832 .....                                                          |     |
| <i>P. thebesensis</i> , n. s., M. & W., 1868, page 354, fig. —, and pl. vi, fig. 3. ....        | 354 |
| <i>Ambonychia</i> , Hall, 1847 .....                                                            |     |
| <i>A. acutirostris</i> , Hall ? 1865, pl. v, figs. 8 a, b, and 9 c. ....                        | 354 |
| <i>Amphioxysia</i> , Hall, 1864 .....                                                           | 355 |
| <i>A. neglecta</i> , McCheney, 1861, pl. v, figs. 9 a, b (not c) .....                          | 355 |
| <b>Gasteropoda</b> .....                                                                        |     |
| <i>Pleurotomaria</i> , DeFrance, 1824 .....                                                     |     |
| <i>P. cassi</i> , n. s., M. & W., 1868, pl. v, fig. 5. ....                                     | 359 |
| <i>P. cyclonemoides</i> , n. s., M. & W., 1868, pl. v, fig. 4. ....                             | 360 |
| <i>Subulites</i> (Conrad), Emmons, 1842 .....                                                   | 361 |
| <i>S. (Polypheomopsis) brevis</i> , Winchell & Marcy, 1865, pl. v, fig. 6. ....                 | 358 |
| <b>Articulata</b> .....                                                                         |     |
| <b>Crustacea</b> .....                                                                          |     |
| <i>Dalmanites</i> , Auot. ....                                                                  |     |
| <i>D. dana</i> , M. & W., 1865, pl. vi, fig. 1 a-f. ....                                        | 363 |

## FOSSILS OF THE LOWER HELDERBERG GROUP.

|                                                                       |     |
|-----------------------------------------------------------------------|-----|
| <b>Radiata</b> .....                                                  |     |
| <b>Zoophyta</b> .....                                                 |     |
| <i>Striatopora</i> , Hall, 1852 .....                                 | 366 |
| <i>S. missouriensis</i> , n. s., M. & W., 1868, pl. vii, fig. 4. .... | 368 |
| <b>Echinodermata</b> .....                                            |     |



|                                                                                       | Page.   |
|---------------------------------------------------------------------------------------|---------|
| <i>Edriocrinus</i> , Hall, 1859.....                                                  | 370     |
| <i>E. pocilliformis</i> , Hall, 1859, pl. vii, figs. 5 a, b.....                      | 370-371 |
| <i>Mollusca</i> .....                                                                 | 371     |
| <i>Brachiopoda</i> .....                                                              | 371     |
| <i>Orthis</i> , Dalman, 1828.....                                                     | 371     |
| <i>O. hybrida</i> , Sowerby ? 1839, pl. vii, figs. 7 a-d.....                         | 371-372 |
| <i>O. subcarinata</i> , Hall, 1857, pl. vii, figs. 6 a-d.....                         | 373-374 |
| <i>Strophomena</i> , Rafinesque, 1820.....                                            | 374     |
| <i>S. (Strophodonta) cavumbona</i> , Hall ? 1857, pl. vii, fig. 10 a, b.....          | 374-376 |
| <i>Merista</i> , Suess, 1851.....                                                     | 376     |
| <i>M. lavie</i> , Vanuxem ? sp., 1843, pl. vii, figs. 8 a, c.....                     | 376-377 |
| <i>Zygospira</i> , Hall, 1862.....                                                    | 377-380 |
| <i>Z. subconcava</i> , n. s., M. & W., 1868, pl. vii, fig. 1 a-d.....                 | 380-381 |
| <i>Trematospira</i> , Hall, 1859.....                                                 | 381     |
| <i>T. ? imbricata</i> , Hall, 1857, pl. vii, fig. 2 a-e.....                          | 381-382 |
| <i>Cyrtina</i> , Davidson, 1858.....                                                  | 383     |
| <i>C. dalmani</i> , Hall, sp., 1857, pl. vii, figs. 3 a, b.....                       | 383     |
| <i>Spirifer</i> , Sowerby, 1815.....                                                  | 384     |
| Subgenus <i>Trigonotreta</i> , Koenig, 1825.....                                      | 384     |
| <i>S. perlamellosus</i> , Hall, 1857, pl. vii, figs. 9 a, b.....                      | 384     |
| <i>Gasteropoda</i> .....                                                              | 384     |
| <i>Platyceras</i> , Conrad, 1840.....                                                 | 384-387 |
| <i>P. subundatum</i> , n. s., M. & W., 1868, pl. vii, figs. 13 a, b, and 14 a, b..... | 387-388 |
| <i>P. spirale</i> , Hall, 1859, pl. vii, fig. 12 a-c.....                             | 389     |
| <i>P. (Orthonychia) pyramidalum</i> , Hall ? 1859, pl. vii, fig. 11.....              | 389-390 |
| <i>Articulata</i> .....                                                               | 390     |
| <i>Crustacea</i> .....                                                                | 390     |
| <i>Acidaspis</i> , Murchison, 1839.....                                               | 390     |
| <i>Acidaspis hamata</i> , Conrad, sp., 1841, pl. vii, fig. 15.....                    | 390-391 |
| <i>Dalmanites</i> , Auct.....                                                         | 391     |
| <i>D. tridentiferus</i> , Shumard, 1855, pl. vii, fig. 16.....                        | 391-392 |

DEVONIAN SPECIES.

FOSSILS OF THE ORISKANY GROUP.

|                                                                                                        |         |
|--------------------------------------------------------------------------------------------------------|---------|
| <i>Mollusca</i> .....                                                                                  | 393     |
| <i>Brachiopoda</i> .....                                                                               | 393     |
| <i>Leptæna</i> , Dalman, 1827.....                                                                     | 393     |
| <i>L. ? nucleata</i> , Hall, 1859, pl. viii, figs. 8 a-d.....                                          | 393-394 |
| <i>Rhynchonella</i> , Fischer, 1809.....                                                               | 394     |
| <i>R. speciosa</i> , Hall, 1857, pl. viii, fig. 9.....                                                 | 394-395 |
| <i>Eatonia</i> , Hall, 1857.....                                                                       | 395     |
| <i>E. peculiaris</i> , Conrad, sp., 1841, pl. viii, figs. 2 a-d.....                                   | 395-396 |
| <i>Leptocælia</i> , Hall, 1857.....                                                                    | 397     |
| <i>L. flabellites</i> , Conrad, sp., 1841, pl. viii, figs. 3 a-c.....                                  | 397-398 |
| <i>Spirifer</i> , Sowerby, 1815.....                                                                   | 398     |
| Subgenus <i>Trigonotreta</i> , Koenig, 1825.....                                                       | 398     |
| <i>S. engelmanni</i> , n. s., M. & W., 1868, pl. viii, figs. 5 a-d.....                                | 398-399 |
| <i>S. hemicyolus</i> , n. s., M. & W., 1868, pl. viii, figs. 6 a-d, and 7 a, b ?.....                  | 399-401 |
| <i>Renssæleria</i> , Hall, 1859.....                                                                   | 401     |
| <i>R. condoni</i> , McCheaney, 1861, pl. viii, figs. 4 a, b.....                                       | 401-402 |
| <i>Stricklandinia</i> , Billings, 1863.....                                                            | 402     |
| <i>S. elongata</i> var. <i>curta</i> , M. & W., 1868, pl. viii, figs. 1 a-c, and pl. ix, fig. 5 ?..... | 402-404 |
| <i>Gasteropoda</i> .....                                                                               | 404     |
| <i>Strophostylus</i> , Hall, 1859.....                                                                 | 404     |
| <i>S. cancellatus</i> , n. s., M. & W., 1868, p. 404, figs. and pl. viii, fig. 12 (11 a, b ?).....     | 404-405 |
| <i>Platyceras</i> , Conrad, 1840.....                                                                  | 406     |
| <i>P. spirale</i> , Hall ? 1859, pl. viii, fig. 10.....                                                | 406     |

FOSSILS OF THE CORNIFEROUS GROUP.

|                                                                   |         |
|-------------------------------------------------------------------|---------|
| <i>Radiata</i> .....                                              | 407     |
| <i>Zoophyta</i> .....                                             | 407     |
| <i>Pleurodictyum</i> , Goldfuss, 1829.....                        | 407     |
| <i>P. problematicum</i> , Goldf. ? 1859, pl. ix, figs. 1 a-c..... | 407-409 |
| <i>Baryphyllum</i> , E. & H., 1850.....                           | 409     |

|                                                                                  | Page.   |
|----------------------------------------------------------------------------------|---------|
| <i>B. ? arenarium</i> , n. s., M. & W., 1868, pl. ix, figs. 2 a, b               | 408-410 |
| <i>Zaphrentis</i> , R. & C., 1820                                                | 410     |
| <i>Zaphrentis</i> , sp. undt., pl. ix, figs. 3 a, b                              | 410     |
| <b>Mollusca</b>                                                                  | 410     |
| <b>Brachiopoda</b>                                                               | 410     |
| <i>Orthis</i> , Dalman, 1828                                                     | 410     |
| <i>Orthis</i> , undt., pl. ix, fig. 4                                            | 410-411 |
| <i>Strophomena</i> , Raf., 1820                                                  | 411     |
| <i>S. (Strophodonta)</i> , sp. f pl. ix, figs. 9 (and 7 a)                       | 411-412 |
| <i>S. (Strophodonta)</i> , sp., pl. vi, figs. 6 a, b                             | 412     |
| <i>Productus</i> , Sowerby, 1814                                                 | 412     |
| <i>P. exanthematus</i> , Hall ? 1857, pl. x, figs. 3 a-c                         | 412-413 |
| <i>Spirifer</i> , Sowerby, 1815                                                  | 414     |
| Subgenus <i>Trigonotreta</i> , Koenig, 1825                                      | 414     |
| <i>S. perextensus</i> , n. s., M. & W., 1868, pl. x, figs. 1 a-d                 | 414-415 |
| <i>S. paradoxus</i> , Schlot ? sp., 1813, pl. x, fig. 2                          | 415-416 |
| <b>Articulata</b>                                                                | 416     |
| <b>Crustacea</b>                                                                 | 416     |
| <i>Dalmanites</i> , Auct.                                                        | 416     |
| Subgenus <i>Odontocephalus</i> , Conrad, 1840                                    | 416     |
| <i>Odontocephalus</i> — ? pl. ix, fig. 10                                        | 416-417 |
| <i>Dalmanites (Odontocephalus) ageria</i> , Hall ? sp., 1861, pl. x, figs. 4 a-c | 417-418 |
| FOSSILS OF THE HAMILTON GROUP.                                                   |         |
| <b>Protozoa</b>                                                                  | 419     |
| <b>Spongiae</b>                                                                  | 419     |
| <i>Astræospongia</i> , Rœmer, 1854                                               | 419     |
| <i>A. hamiltonensis</i> , M. & W., 1866, pl. x, fig. 6                           | 419     |
| <b>Radiata</b>                                                                   | 420     |
| <b>Zoophyta</b>                                                                  | 420     |
| <i>Microcyclus</i> ,* n. g., M. & W., 1866                                       | 420     |
| <i>M. discus</i> , n. s., M. & W., 1868, pl. xi, figs. 7 a, b                    | 420-421 |
| <b>Echinodermata</b>                                                             | 421     |
| <i>Taxocrinus</i> , Phillips, 1843                                               | 421     |
| <i>T. gracilis</i> , M. & W., 1865, page 421, fig. —, and pl. xiii, fig. 3       | 421-423 |
| <b>Mollusca</b>                                                                  | 423     |
| <b>Brachiopoda</b>                                                               | 423     |
| <i>Orthis</i> , Dalman, 1827                                                     | 423     |
| <i>O. mefariani</i> , Meek, 1908, pl. xiii, figs. 10 a-d                         | 423-424 |
| <i>O. iowensis</i> var. <i>furnarius</i> , Hall, pl. xiii, figs. 9 a, b          | 424-425 |
| <i>Strophomena</i> , Raf., 1820                                                  | 426     |
| <i>S. rhomboidalis</i> , Wahlemb., sp., 1821, pl. x, fig. 7 a, b                 | 426-427 |
| <i>Tropidoleptus</i> , Hall, 1857                                                | 427     |
| <i>T. carinatus</i> , Conrad, sp., 1839, pl. xiii, figs. 2 a-c                   | 427-428 |
| <i>Pentamerus</i> , Sowerby, 1813                                                | 428     |
| <i>P. comis</i> , Owen ? sp., 1855, pl. xiii, figs. 6 a-c                        | 428-429 |
| <i>P. subglobosus</i> , n. s., M. & W., 1868, pl. xiii, figs. 5 a-c              | 429-430 |
| <i>Atrypa</i> , Dalman, 1827                                                     | 430     |
| <i>A. aspera</i> , Schlottheim, sp., 1813, pl. xiii, figs. 7 a-d                 | 430-431 |
| <i>A. reticularia</i> , Linnaeus, sp., 1767, pl. xiii, fig. 11                   | 432-433 |
| <i>Spirifer</i> , Sowerby, 1815                                                  | 433     |
| Subgenus <i>Trigonotreta</i> , Koenig, 1825                                      | 433     |
| <i>S. fornacula</i> , Hall, 1857, pl. xiii, figs. 8 a-c                          | 433-434 |
| <i>S. subundiferus</i> , n. s., M. & W., 1868, pl. x, fig. 5 a-c                 | 434-435 |
| <i>Cyrtina</i> , Davidson, 1858                                                  | 436     |
| <i>O. triquetra</i> , Hall, sp., 1858, pl. xiii, fig. 4 a-d                      | 436     |
| <i>Lingula</i> , Bruguiere, 1792                                                 | 437     |
| <i>L. subpatulata</i> , n. s., M. & W., 1868, pl. xiii, fig. 1                   | 437     |
| <b>Lamellibranchiata</b>                                                         | 437     |
| <i>Pterinea</i> , Goldf., 1832                                                   | 437     |
| <i>P. ? subpapyracea</i> , M. & W., 1866, pl. xi, fig. 5                         | 437-438 |
| <i>Modiolopsis</i> , Hall, 1847                                                  | 438     |
| <i>M. ? perorata</i> , M. & W., 1865, pl. xi, fig. 2                             | 438-439 |

\* μικρος, small; κύκλος, a circle.

|                                                                                       | Page.   |
|---------------------------------------------------------------------------------------|---------|
| <i>Grammysia</i> , de Verneuil, 1847.....                                             | 439     |
| <i>G. ? rhomboidalis</i> , M. & W., 1865, pl. xi, figs. 5 a, b.....                   | 439-441 |
| <i>Gasteropoda</i> .....                                                              | 441     |
| <i>Platyceras</i> , Conrad, 1840.....                                                 | 441     |
| <i>P. ventricosum</i> , Conrad, 1840, pl. xi, figs. 4 a, b.....                       | 441-442 |
| <i>Isonema</i> ,* M. & W., 1865.....                                                  | 442-443 |
| <i>I. depressa</i> , M. & W., 1865, p. 443, figs. A, B, and pl. xi, figs. 6 a, b..... | 443     |
| <i>Cephalopoda</i> .....                                                              | 444     |
| <i>Gomphoceras</i> , Sowerby, 1839.....                                               | 444     |
| <i>G. turbiniforme</i> , M. & W., 1866, pl. xii, figs. 2 a, b.....                    | 444     |
| <i>Cyrtoceras</i> , Goldf., 1832.....                                                 | 445     |
| <i>C. sacculum</i> , M. & W., 1866, pl. xii, figs. 3 a-c.....                         | 445-446 |
| <i>Gyroceras</i> , de Koninck, 1844.....                                              | 446     |
| <i>G. constrictum</i> , n. s., M. & W., 1866, pl. xii, figs. 1 a, b.....              | 446-447 |
| <i>Articulata</i> .....                                                               | 447     |
| <i>Crustacea</i> .....                                                                | 447     |
| <i>Phacops</i> , Emmerich, 1839.....                                                  | 447     |
| <i>P. rana</i> , Green, sp., 1832, pl. xi, figs. 1 a-c.....                           | 447-449 |

## CARBONIFEROUS SPECIES.

## FOSSILS OF THE KINDERHOOK GROUP.

|                                                                                |         |
|--------------------------------------------------------------------------------|---------|
| <i>Mollusca</i> .....                                                          | 450     |
| <i>Brachiopoda</i> .....                                                       | 450     |
| <i>Rhynchonella</i> , Fisher, 1809.....                                        | 450     |
| <i>R. missouriensis</i> , Shumard, 1855, pl. xiv, figs. 7 a-d.....             | 450-452 |
| <i>Lamellibranchiata</i> .....                                                 | 453     |
| <i>Pernopecten</i> , Winchell, 1865.....                                       | 453     |
| <i>P. shumardianus</i> , Winchell, 1865, pl. xiv, figs. 6 a, b.....            | 453-455 |
| <i>Pterinea</i> , Goldf., 1832.....                                            | 456     |
| <i>P. undulata</i> , n. s., M. & W., 1866, pl. xiv, fig. 5.....                | 456     |
| <i>Gasteropoda</i> .....                                                       | 457     |
| <i>Platyceras</i> , Conrad, 1840.....                                          | 457     |
| <i>P. (Orthonychia?) subplicatum</i> , M. & W., 1866, pl. 14, figs. 4 a-c..... | 457     |
| <i>P. hakotoides</i> , M. & W., 1866, pl. xiv, figs. 3 a, b.....               | 458     |
| <i>Porcellia</i> , Leveillé, 1835.....                                         | 458     |
| <i>P. nodosa</i> , Hall, 1860, pl. xiv, figs. 1 a, b.....                      | 458-459 |
| <i>Gyroceras</i> , de Koninck, 1844.....                                       | 459     |
| <i>G. rockfordensis</i> , M. & W., 1866, pl. xiv, fig. 2 a.....                | 459-460 |
| <i>Articulata</i> .....                                                        | 460     |
| <i>Crustacea</i> .....                                                         | 460     |
| <i>Proetus</i> , Steininger, 1830?.....                                        | 460     |
| <i>P. ellipticus</i> , M. & W., 1865, pl. xiv, fig. 8.....                     | 460-462 |

## FOSSILS OF THE BURLINGTON GROUP.

|                                                                                             |         |
|---------------------------------------------------------------------------------------------|---------|
| <i>Radiata</i> .....                                                                        | 463     |
| <i>Echinodermata</i> .....                                                                  | 463     |
| <i>Belemnocrinus</i> , White, 1862.....                                                     | 463     |
| <i>B. whitii</i> , M. & W., 1866, p. 463, fig. —, and pl. xviii, fig. 4 a-c.....            | 463-464 |
| <i>Catillocerinus</i> , Troost, 1850.....                                                   | 465     |
| <i>C. wachsmuthi</i> , M. & W., 1866, pl. xviii, fig. 5.....                                | 465-466 |
| <i>Platycrinus</i> , Miller, 1821.....                                                      | 466     |
| <i>P. scobina</i> , M. & W., 1861, p. 466, fig. —, and pl. xvi, fig. 9.....                 | 466-467 |
| <i>P. planus</i> , Owen & Shumard? 1850, pl. xvi, fig. 6.....                               | 467-468 |
| <i>P. (Pleurocerinus) asper</i> , M. & W., 1861, p. 468, fig. —, and pl. xviii, fig. 9..... | 468-469 |
| <i>Agstinocrinus</i> , Miller, 1821.....                                                    | 470     |
| <i>A. (Saccocrinus?) amplus</i> , M. & W., 1861, p. 470, fig. —, and pl. xvi, fig. 2.....   | 470-472 |
| <i>A. (Batocrinus) pistillus</i> , M. & W., 1865, pl. xvi, figs. 4 a, b.....                | 472-474 |
| <i>Steganoecrinus</i> , M. & W., 1866.....                                                  | 474     |
| <i>S. pentagonus</i> , Hall, sp., 1858, pl. xvi, fig. 8.....                                | 474-476 |
| <i>Rhodoecrinus</i> , Miller, 1821.....                                                     | 476     |
| <i>R. nanus</i> , M. & W., 1866, p. 476, figs. —, and pl. xviii, figs. 2 a, b.....          | 476-478 |
| <i>Buraecrinus</i> , † M. & W., 1861.....                                                   | 478     |
| <i>B. wachsmuthi</i> , M. & W., 1861, pl. xvii, fig. 6, and p. 479, fig. —.....             | 479-480 |

\* ισος, equal; νημα, a thread.

† βουρα, a purse; λily, a lily.

|                                                                                                                  | Page    |
|------------------------------------------------------------------------------------------------------------------|---------|
| <i>Cyathocrinus</i> , Miller, 1821 .....                                                                         | 481     |
| <i>C. enornis</i> , M. & W., 1865, pl. xvi, figs. 3 a, b .....                                                   | 481-482 |
| <i>C. wachemuthi</i> , M. & W., 1861, p. 482, fig. —, and pl. xvi, fig. 5 .....                                  | 482-484 |
| <i>Poteroocrinus</i> , Miller, 1821 .....                                                                        | 484     |
| <i>P. tenuibrachiatus</i> , M. & W., 1861, p. 484, fig. —, and pl. xvi, fig. 1 .....                             | 484-485 |
| <i>P. rubimpressus</i> , M. & W., 1861, p. 485, fig. —, and pl. xviii, figs. 1 a, b .....                        | 485-486 |
| <i>P. carinatus</i> , M. & W., 1861, p. 486, fig. —, and pl. xvii, fig. 1 .....                                  | 486-488 |
| Subgenus <i>Scaphiocrinus</i> , Hall, 1858 .....                                                                 | 488     |
| <i>S. wachemuthi</i> , M. & W., 1861, p. 488, fig. —, and pl. xvi, figs. 7 a, b .....                            | 488-489 |
| <i>Poteroocrinus (Scaphiocrinus) tenuidactylus</i> , M. & W., 1863, p. 490, fig. —, and pl. xviii, fig. 10 ..... | 490-491 |
| <i>Onychocrinus</i> , Lyon & Casseday, 1859 .....                                                                | 491     |
| <i>O. diversus</i> , M. & W., 1866, page 492, fig. —, and pl. xvii, figs. 5 a, b .....                           | 492-495 |
| <i>Tazocrinus</i> , Phillips, 1843 .....                                                                         | 495     |
| <i>Forbesiocrinus</i> , de Kon. & Le Hon, 1854 .....                                                             | 495     |
| <i>F. agassizi</i> , var. <i>giganteus</i> , M. & W., 1861, pl. xviii, fig. 8 .....                              | 495     |
| <i>Granatocrinus</i> (Troost), Hall, 1852 .....                                                                  | 496     |
| <i>G. projectus</i> , M. & W., sp., 1861, page 496, fig. —, and pl. xviii, fig. 7 .....                          | 496     |
| <i>G. norwoodi</i> , O. & S. f sp., 1860, pl. xviii, fig. 8 .....                                                | 496-497 |
| <i>G. shumardi</i> , M. & W., 1866, page 498, fig. —, and pl. xviii, figs. 6 a, f b .....                        | 498-499 |
| <b>Asterioidea</b> .....                                                                                         | 499     |
| <i>Schæmaster</i> , M. & W., 1860 .....                                                                          | 499     |
| <i>S. wachemuthi</i> , M. & W., 1866, pl. xvii, fig. 4 .....                                                     | 499-500 |
| <b>Mollusca</b> .....                                                                                            | 501     |
| <b>Polyzoa</b> .....                                                                                             | 501     |
| <i>Evactinopora</i> , M. & W., 1865 .....                                                                        | 501     |
| <i>E. radiata</i> , M. & W., 1865, page 502, fig. —, and pl. xvii, figs. 2 a, b .....                            | 502     |
| <i>E. serradiata</i> , n. s., M. & W., 1868, pl. xvii, fig. 3 .....                                              | 502     |
| <i>E. grandis</i> , n. s., M. & W., 1868, p. 503, fig. —, and pl. xv, figs. 2 a, b .....                         | 503     |
| <i>Fenestella</i> , Lonsdale, 1839 .....                                                                         | 504     |
| Subgenus <i>Lyropora</i> , Hall, 1856 .....                                                                      | 504     |
| <i>Fenestella (Lyropora) retrorsa</i> , n. s., M. & W., 1868, pl. xv, fig. 1 .....                               | 504     |
| <b>Brachiopoda</b> .....                                                                                         | 505     |
| <i>Chonetes</i> , Fischer, 1837 .....                                                                            | 505     |
| <i>C. illinoisensis</i> , Worthen, 1860, pl. xv, figs. 8 a, b .....                                              | 505-506 |
| <b>Gasteropoda</b> .....                                                                                         | 506     |
| <i>Metoplotoma</i> , Phillips, 1836 .....                                                                        | 506     |
| <i>M. ? umbella</i> , M. & W., 1866, pl. xv, figs. 6 a, b, c; and 7 .....                                        | 506-507 |
| <i>Platyceras</i> , Conrad, 1840 .....                                                                           | 506     |
| <i>P. (?) reversum</i> , Hall, 1860, p. 508, fig. —, and pl. xv, figs. 4 a, b .....                              | 508-509 |
| <i>P. biserialis</i> , Hall, 1860, pl. xv, figs. 3 a, b .....                                                    | 509     |
| <i>P. (Orthonychia) quinoyense</i> , McCheaney, 1861, pl. xv, figs. 5 a, b .....                                 | 510     |

## FOSSILS OF THE KROKUK GROUP.

|                                                                                                |         |
|------------------------------------------------------------------------------------------------|---------|
| <b>Radiata</b> .....                                                                           | 511     |
| <b>Echinodermata</b> .....                                                                     | 511     |
| <i>Platyerinus</i> , Miller, 1821 .....                                                        | 511     |
| <i>P. hemisphaericus</i> , M. & W., 1865, p. 511, fig. —, and pl. xx, figs. 2 a, b .....       | 511-513 |
| <i>P. niotensis</i> , M. & W., 1865, p. 513, fig. —, and pl. xx, fig. 3 .....                  | 513-514 |
| <i>Poteroocrinus</i> , Miller, 1821 .....                                                      | 515     |
| <i>P. indianensis</i> , M. & W., 1865, pl. xx, fig. 4; and p. 515, fig. — .....                | 515-516 |
| <i>Cyathocrinus</i> , Miller, 1821 .....                                                       | 517     |
| <i>C. farleyi</i> , M. & W., 1866, p. 517, fig. —, and pl. xx, figs. 1 a, b, and 6 c .....     | 517-518 |
| <i>C. ?</i> sp. undt., pl. xx, figs. 5 a-c .....                                               | 518-519 |
| <i>C. quinquelobus</i> , M. & W., 1865, p. 519, fig. —; and pl. xx, figs. 6 a, b (not c) ..... | 519-520 |
| <i>C. arboreus</i> , M. & W., 1865, p. 520, fig. — .....                                       | 520-522 |
| <b>Echinoidea</b> .....                                                                        | 522     |
| <b>Perischoechinidae</b> .....                                                                 | 522     |
| <i>Lepidocthea</i> ,* n. g., M. & W., 1868 .....                                               | 522-524 |
| <i>L. coreyi</i> , n. s., M. & W., 1868, p. 524, fig. A .....                                  | 524-525 |
| <i>Melonites multipora</i> , p. 524, fig. B .....                                              | 524     |
| <i>Oligoporus danae</i> , p. 524, fig. C .....                                                 | 524     |

\* Lewis, a scale; coreyi, a garment.



|                                                                                         | Page.   |
|-----------------------------------------------------------------------------------------|---------|
| <i>Asteroides</i> .....                                                                 | 526     |
| <i>Onychaster</i> , * n. g., M. & W., 1868 .....                                        | 526     |
| <i>O. flexilis</i> , n. s., M. & W., 1868, p. 526, figs. A, B, C, D .....               | 526-528 |
| <i>Mollusca</i> .....                                                                   | 528     |
| <i>Brachiopoda</i> .....                                                                | 528     |
| <i>Productus</i> , Sowerby, 1814 .....                                                  | 528     |
| <i>P. magnus</i> , M. & W., 1861, pl. xx, figs. 7 a-c .....                             | 528-530 |
| <i>Spirifer</i> , Sowerby, 1815 .....                                                   | 530     |
| <i>S. propinquus</i> , Hall, '858, pl. xix, figs. 8 a-c .....                           | 530-532 |
| <i>Lamellibranchiata</i> .....                                                          | 532     |
| <i>Aviculopecten</i> , McCoy, 1851 .....                                                | 532     |
| <i>A. indianensis</i> , M. & W., 1866, pl. xix, figs. 6a, b .....                       | 532-534 |
| <i>Anthracopectera</i> , Salter, 1863 .....                                             | 534     |
| <i>A. ? fragilis</i> , M. & W., 1866, pl. xix, fig. 4 .....                             | 534-535 |
| <i>Pleurophorus</i> , King, 1844 .....                                                  | 535     |
| <i>P. costatiformis</i> † M. & W., 1865, p. 535, fig. —, and pl. xix, fig. 8 f. ....    | 535-536 |
| <i>Lithophaga</i> , Lamarck, 1812 .....                                                 | 536     |
| <i>L. linguatæ</i> , Phillips†, sp., 1836, pl. xix, figs. 1, 2 .....                    | 536-537 |
| <i>Sedgwickia</i> , McCoy, 1844 .....                                                   | 537     |
| <i>S. (Sanguinolites) subarcuata</i> , M. & W., 1865, pl. xix, fig. 3 b (not 3 a) ..... | 537-538 |
| <i>Allorisma</i> , King, 1844 .....                                                     | 538     |
| <i>A. (Chenomya ?) hybrida</i> , M. & W., 1865, pl. xix, fig. 3 a (not 3 b) .....       | 538-539 |

ARTICULATE FOSSILS OF THE COAL MEASURES.

|                                                                                               |         |
|-----------------------------------------------------------------------------------------------|---------|
| <i>Crustacea</i> .....                                                                        | 540     |
| <i>Entomostraca</i> .....                                                                     | 540     |
| <i>Gnathostomata</i> .....                                                                    | 540     |
| <i>Phyllopoda</i> .....                                                                       | 540     |
| <i>Ceratiocaris</i> , McCoy, 1849 .....                                                       | 540     |
| <i>C. ? sinuatus</i> , M. & W., 1868, p. 540, fig. A .....                                    | 540-541 |
| <i>Leaia</i> , Jones, 1862 .....                                                              | 541     |
| <i>L. tricarinata</i> , n. s. M. & W., 1868, woodcut, figs. B 1, 2, 3 (and C 1), p. 540 ..... | 541-543 |
| <i>Merostomata</i> .....                                                                      | 544     |
| <i>Eurypterida</i> .....                                                                      | 544     |
| <i>Eurypterus</i> , De Kay, 1825 .....                                                        | 544     |
| <i>E. (Anthracoectes) mazonensis</i> , M. & W., 1868, figs. —, p. 544 .....                   | 544     |
| <i>Ziphoceura</i> .....                                                                       | 547     |
| <i>Euproops</i> , Meek, 1867 .....                                                            | 547     |
| <i>E. danæ</i> , M. & W., 1865, p. 547, figs. A, B .....                                      | 547-549 |
| <i>Tetradecapoda</i> .....                                                                    | 549     |
| <i>Isopoda</i> .....                                                                          | 549     |
| <i>!Acanthotelson</i> , M. & W., 1860 .....                                                   | 549     |
| <i>A. stimpsoni</i> , M. & W., 1860, p. 549, figs. A, B .....                                 | 549-550 |
| <i>A. event</i> , M. & W., 1868, p. 551, figs. A, B, C, D .....                               | 551     |
| <i>Decapoda</i> .....                                                                         | 552     |
| <i>Macrura</i> .....                                                                          | 552     |
| <i>Palæocaris</i> , M. & W., 1865 .....                                                       | 552     |
| <i>P. typus</i> , M. & W., 1865, p. 552, figs. A, B .....                                     | 552-553 |
| <i>Gamponix fimbriatus</i> , p. 552, figs. C, D .....                                         | 552     |
| <i>Anthropalæmon</i> , Salter, 1861 .....                                                     | 554     |
| <i>A. gracilis</i> , M. & W., 1865, p. 554, figs. A, B .....                                  | 554-555 |
| <i>Myriapoda</i> .....                                                                        | 556     |
| <i>Euphoberia</i> , M. & W., 1868 .....                                                       | 556     |
| <i>E. armigera</i> , M. & W., 1865, p. 556, figs. A, B, C, D .....                            | 556-558 |
| <i>E. ? major</i> , M. & W., 1868, p. 558, fig. — .....                                       | 558-559 |
| <i>Arachnida</i> .....                                                                        | 560     |
| <i>Pulmonaria</i> .....                                                                       | 560     |
| <i>Eoscorpis</i> , M. & W., 1868 .....                                                        | 560     |
| <i>E. carbonarius</i> , M. & W., 1868, p. 560, figs. a, c, d, m, p. ....                      | 560-562 |
| <i>Mazonia</i> ,† n. g. M. & W., 1868 .....                                                   | 563     |
| <i>M. woodiana</i> , M. & W., 1868, p. 563, figs. A, B, C, D .....                            | 563-565 |
| Note on the genus <i>Palæocampa</i> .....                                                     | 565     |

\* ovif, a claw; scorp, a star.

† Mazon, name of stream.

## 60.

MEEK, F. B. Remarks on the geology of the valley of Mackenzie River, with figures and descriptions of fossils from that region, in the Museum of the Smithsonian Institution, chiefly collected by the late Robert Kennicott, Esq. <Trans. Chicago Acad. of Sci., vol. i, pp. 61-114, plates xi, xv. 1868. Chicago, 1867-1869.

## Devonian.

## CORALS.

## Cyathophylloidea.

|                                                                      | Page  |
|----------------------------------------------------------------------|-------|
| <i>Cyathophyllum</i> , Goldfuss, 1826.....                           | 79    |
| <i>C. articum</i> , n. s., Meek, 1868, pl. xi, fig. 8.....           | 79-80 |
| <i>Cyathophyllum</i> , Lonsdale, 1839.....                           | 80    |
| <i>C. americanum</i> var. <i>articum</i> , Meek, pl. xi, fig. 6..... | 80-81 |
| <i>Autophyllum</i> , Edwards & Halme, 1860.....                      | 81    |
| <i>A. richardsoni</i> , n. s., Meek, 1868, pl. xi, fig. 3.....       | 81-82 |
| <i>Zaphrentis</i> , Rafinesque, 1820.....                            | 82    |
| <i>Z. recta</i> , n. s., Meek, 1868, pl. xi, fig. 1.....             | 82    |
| <i>Z. mcFarlandi</i> , n. s., Meek, 1868, pl. xi, fig. 2.....        | 82    |
| <i>Smithia</i> , Edwards & Halme, 1851.....                          | 82    |
| <i>S. verrilli</i> , n. s., Meek, 1868, pl. xi, fig. 7.....          | 82-84 |
| <i>Combophyllum</i> , Edwards & Halme, 1858.....                     | 84    |
| <i>C. multiradiatum</i> , n. s., Meek, 1868, pl. xi, fig. 4.....     | 84-85 |

## Fungidae.

|                                                           |    |
|-----------------------------------------------------------|----|
| <i>Palaeocyclus</i> , Edwards & Halme, 1849.....          | 85 |
| <i>P. birbyi</i> , n. s., Meek, 1868, pl. xi, fig. 5..... | 85 |

## Favositida.

|                                                             |       |
|-------------------------------------------------------------|-------|
| <i>Favosites</i> , Lamarck, 1816.....                       | 86    |
| <i>F. polymorpha</i> , Goldfuss, sp., pl. xi, fig. 10.....  | 86    |
| <i>Airesites</i> , Lamarck, 1801.....                       | 86    |
| <i>A. vallerum</i> , n. s., Meek, 1868, pl. xi, fig. 9..... | 86-87 |

## Brachiopoda.

## Lingulida.

|                                                             |    |
|-------------------------------------------------------------|----|
| <i>Lingula</i> , Brugulère.....                             | 87 |
| <i>L. minuta</i> , n. s., Meek, 1868, pl. xiii, fig. 1..... | 87 |

## Strophomenida.

|                                                                         |       |
|-------------------------------------------------------------------------|-------|
| <i>Strophomena</i> , Rafinesque.....                                    | 87    |
| <i>E. (Strophodonta) demissa</i> , Conrad, 1842, pl. xiii, fig. 6.....  | 87-88 |
| <i>E. (Strophodonta) subdemissa</i> , Hall, 1858, pl. xiii, fig. 7..... | 88    |
| <i>Orthis</i> , Dalman, 1828.....                                       | 88    |
| <i>O. mcFarlandi</i> , n. s., Meek, 1868, pl. xii, fig. 1.....          | 88-89 |
| <i>O. wisconsin</i> , Hall? 1858, pl. xii, fig. 2.....                  | 89-91 |

## Productida.

|                                                          |       |
|----------------------------------------------------------|-------|
| <i>Productus</i> , Sowerby.....                          | 91    |
| <i>P. dissimilis</i> , Hall? 1858, pl. xiii, fig. 3..... | 91    |
| <i>Productus</i> ———? Meek, 1869, pl. xiii, fig. 4.....  | 91-92 |
| <i>Productus</i> ———? Meek, 1869, pl. xiii, fig. 5.....  | 92    |
| <i>Oronotus</i> , Fischer.....                           | 92    |
| <i>O. pusillus</i> , Hall? 1857, pl. xiii, fig. 2.....   | 92    |

## Erycinonellida.

|                                                                 |       |
|-----------------------------------------------------------------|-------|
| <i>Erycinonella</i> , Fischer, 1809.....                        | 93    |
| <i>E. castanea</i> , n. s., Meek, 1868, pl. xiii, fig. 9.....   | 93-95 |
| <i>Erycinonella</i> ———? Meek, 1869, pl. xv, fig. 4.....        | 95    |
| <i>Leptambon</i> , Sowerby, 1812.....                           | 95    |
| <i>L. urvatus</i> , L. s., Meek, 1868, pl. xiii, fig. 11.....   | 95-96 |
| <i>Atrypa</i> , Lamarck, 1827.....                              | 96    |
| <i>A. aspera</i> , Schuchert, sp., 1830, pl. xiii, fig. 12..... | 96-97 |
| <i>A. reticulata</i> , Linn. sp., 1767, pl. xiii, fig. 13.....  | 97    |

## Atrypinae.

|                                                                                |         |
|--------------------------------------------------------------------------------|---------|
| <i>Atrypa</i> , Linnæus, 1758.....                                             | 97      |
| <i>A. billingsi</i> , L. s., Meek, 1868, pl. xiv, fig. 6.....                  | 97-98   |
| <i>A. hamiltonensis</i> , Hall, 1857, pl. xiv, fig. 10, and figs. 5 and 7..... | 98-100  |
| <i>A. yonah</i> , L. s., Meek, 1868, pl. xiv, fig. 8.....                      | 100-101 |
| <i>Atrypa</i> ———? 1857.....                                                   | 101     |
| <i>A. armstrongi</i> , L. s., Meek, 1868, pl. xiv, fig. 9.....                 | 101-102 |
| <i>A. compacta</i> , L. s., Meek, 1868, pl. xiv, fig. 11.....                  | 102-103 |

|                                                                                    | Page.   |
|------------------------------------------------------------------------------------|---------|
| Subgenus <i>Martinia</i> , McCoy, 1844.....                                        | 103     |
| <i>S. (Martinia) sublineatus</i> , n. s., Meek, 1868, pl. xiv, fig. 1 .....        | 103-104 |
| <i>S. (Martinia) richardsoni</i> , n. s., Meek, 1868, pl. xiv, fig. 2 .....        | 104-105 |
| <i>S. (Martinia) meristoides</i> , n. s., Meek, 1868, pl. xiv, fig. 3 .....        | 106-107 |
| <i>S. (Martinia) franklini</i> , n. s., Meek, 1868, pl. xiv, fig. 12 .....         | 107-108 |
| <i>Rensselaeria</i> , Hall, 1839 .....                                             | 108     |
| <i>R. lavis</i> , n. s., M. & W., 1868, pl. xiii, fig. 8, and pl. xiv, fig. 4..... | 108-109 |
| <i>Gasteropoda.</i>                                                                |         |
| <i>Pleurotomariida.</i>                                                            |         |
| <i>Pleurotomaria</i> , DeFrance, 1826 .....                                        | 110     |
| <i>Pleurotomaria</i> ——— ? Meek, 1869, pl. xv, fig. 3.....                         | 110     |
| <i>Cephalopoda.</i>                                                                |         |
| <i>Nautilida.</i>                                                                  |         |
| <i>Gyroceras</i> , Konneck, 1844.....                                              | 110     |
| <i>G. logani</i> , n. s., Meek, 1868 .....                                         | 110-111 |

61.

MEEK, F. B., and WORTHEN, A. H. Notes on some points in the Structure and Habits of the Paleozoic Crinoidea. <Am. Journ. Sci., vol. xlviii, 2d ser., pp. 23-40. 1869. New Haven, 1869.

A reprint from the Proc. Acad. Nat. Sci. Phila., vol. xx, pp. 323-334. (See No. 57.) Afterward republished in the Illinois Geological Reports, vol. v, and in the Canad. Nat., new series, vol. iv, pp. 434-452. (See No. 64.) For list of species see No. 57, p. 53.

62.

MEEK, F. B., and WORTHEN, A. H. Descriptions of new Crinoidea and Echinoidea from the Carboniferous rocks of the Western States, with a note on the Genus *Onychaster*. <Proc. Acad. Nat. Sci. Phila., vol. xxi, pp. 67-83. 1869. Philadelphia, 1869.

Afterward republished in the Illinois Geological Reports, vol. v.

|                                                                            | Page. |
|----------------------------------------------------------------------------|-------|
| <i>Synbathocrinus</i> , Phillips, 1836.....                                | 67    |
| <i>S. wachsmuthi</i> , M. & W., 1869.....                                  | 67-68 |
| <i>S. brevis</i> , n. s., M. & W., 1869.....                               | 68-69 |
| <i>Dichoerinus</i> , Münster, 1839 .....                                   | 69    |
| <i>D. lineatus</i> , n. s., M. & W., 1869 .....                            | 69    |
| <i>D. pisum</i> , n. s., M. & W., 1869 .....                               | 69-70 |
| <i>Eriocrinus</i> , M. & W., 1865 .....                                    | 70    |
| <i>E. antiquus</i> , n. s., M. & W., 1869.....                             | 71-72 |
| <i>E. whitei</i> , n. s., M. & W., 1869 .....                              | 72    |
| <i>Oaleocrinus</i> , Hall, 1852 .....                                      | 72-73 |
| <i>O. ? bradleyi</i> , n. s., M. & W., 1869 .....                          | 73-74 |
| <i>O. ? wachsmuthi</i> , n. s., M. & W., 1869.....                         | 74-75 |
| <i>Gilbertocrinus</i> , Phillips.....                                      | 75    |
| Subgenus <i>Goniasteroidocrinus</i> , Lyon & Casseday, 1859 .....          | 75    |
| <i>G. (Goniasteroidocrinus) tenuiradiatus</i> , n. s., M. & W., 1869 ..... | 75-76 |
| <i>G. (Goniasteroidocrinus) obovatus</i> , n. s., M. & W., 1869.....       | 76-77 |
| <i>Lepidocentrus</i> , Müller (1), 1856.....                               | 77-78 |
| <i>L. irregularis</i> , n. s., M. & W., 1869 .....                         | 78-79 |
| <i>Eocidaris ? squamosa</i> , n. s., M. & W., 1869 .....                   | 79-81 |
| <i>Palæochinus gracilis</i> , n. s., M. & W., 1869 .....                   | 82    |
| <i>Onychaster</i> , M. & W.....                                            | 82-83 |

63.

MEEK, F. B., and A. H. WORTHEN. Remarks on the Blastoidea, with Descriptions of New Species. <Proc. Acad. Nat. Sci. Phila., vol. xxi, pp. 83-91. 1869. Philadelphia, 1869.

Afterward republished in the Illinois Geological Reports, vol. v.

|                                                   | Page  |
|---------------------------------------------------|-------|
| <i>Granatocrinus</i> , Troost .....               | 88    |
| <i>G. melonoides</i> , n. s., M. & W., 1869 ..... | 88-89 |
| <i>G. pisum</i> , n. s., M. & W., 1869 .....      | 89-90 |
| <i>G. neglectus</i> , n. s., M. & W., 1869 .....  | 90-91 |
| <i>G. glaber</i> , n. s., M. & W., 1869 .....     | 91    |

## 64.

MEEK, F. B., and WORTHEN, A. H. Notes on some points in the Structure and Habits of the Palæozoic Crinoidea. <Canad. Nat., new ser., vol. iv, pp. 434-452. 1869.

Reprinted from the Proc. Acad. Nat. Sci. Phila., 1868. (See entry numbers 61 and 67.)

## 65.

MEEK, F. B., and WORTHEN, A. H. Note on the Relations of *Synocladia*, King, 1849, to the Proposed Genus *Septopora*, Prout, 1858. <Proc. Acad. Nat. Sci. Phila., vol. xxxi, pp. 15-18. 1870. Philadelphia, 1870.

The author regards these forms as congeneric.

## 66.

MEEK, F. B., and WORTHEN, A. H. Descriptions of new Species and Genera of Fossils from the Paleozoic rocks of the Western States. <Proc. Acad. Nat. Sci. Phila., vol. xxii, pp. 22-56. 1870. Philadelphia, 1870.

Silurian and Carboniferous: Genera *Codonites*, *Carbonarca*, *Clinopiatha*, *Solenochellus*, *Tennochellus*. Afterward republished and illustrated in the Illinois Geological Reports, vol. vi.

|                                                                                |       |
|--------------------------------------------------------------------------------|-------|
| <i>Foraminifera.</i>                                                           | Page  |
| <i>Receptaculites formosus</i> , n. s., M. & W., 1870 .....                    | 22-23 |
| <i>Echinodermata.</i>                                                          |       |
| <i>Barycrinus spectabilis</i> , n. s., M. & W., 1870 .....                     | 23-24 |
| <i>Cyathocrinites ? poterium</i> , n. s., M. & W., 1870 .....                  | 24-25 |
| <i>Poteriocrinites (Zeacrinus ?) concinnus</i> , n. s., M. & W., 1870 .....    | 25-27 |
| <i>Scaphiocrinus depressus</i> , n. s., M. & W., 1870 .....                    | 27    |
| <i>Zeacrinus ? armiger</i> , n. s., M. & W., 1870 .....                        | 27-28 |
| <i>Zeacrinus (Hydreionocrinus ?) acanthoporus</i> , n. s., M. & W., 1870 ..... | 28-29 |
| <i>Eupachyerinus boydii</i> , n. s., M. & W., 1870 .....                       | 29    |
| <i>Homocrinus angustatus</i> , n. s., M. & W., 1870 .....                      | 30-31 |
| <i>Odonites</i> , n. g., M. & W., 1859 .....                                   | 31-32 |
| <i>O. gracilis</i> , n. s., M. & W., 1870 .....                                | 32-33 |
| <i>Pentremites burlingtonensis</i> , n. s., M. & W., 1870 .....                | 33-34 |
| <i>Oligoporus coreyi</i> , n. s., M. & W., 1870 .....                          | 34    |
| <i>Brachiopoda.</i>                                                            |       |
| <i>Ohonetes ? ? millepunctata</i> , n. s., M. & W., 1870 .....                 | 35-36 |
| <i>Spirifer fastigatus</i> , n. s., M. & W., 1870 .....                        | 36-37 |
| <i>Stricklandinia deformis</i> , n. s., M. & W., 1870 .....                    | 37-38 |
| <i>Lamellibranchiata.</i>                                                      |       |
| <i>Monotis ? gregaria</i> , n. s., M. & W., 1870 .....                         | 38    |
| <i>Aviculopecten spinuliferus</i> , n. s., M. & W., 1870 .....                 | 39    |
| <i>Carbonarca</i> , n. g., M. & W., 1870 .....                                 | 39    |
| <i>C. gibbosa</i> , n. s., M. & W., 1870 .....                                 | 40    |
| <i>Macrodon delicatus</i> , n. s., M. & W., 1870 .....                         | 40    |
| <i>Modiolopsis subnasuta</i> , n. s., M. & W., 1870 .....                      | 41    |
| <i>Schizodus amplius</i> , n. s., M. & W., 1870 .....                          | 41-42 |
| <i>Seacrinus (Priscoanaia) perelegans</i> , n. s., M. & W., 1870 .....         | 42-43 |
| <i>Clinopiatha</i> , n. g., M. & W., 1870 .....                                | 43-44 |
| <i>C. radiata</i> , var. <i>levis</i> , n. s., M. & W., 1870 .....             | 44-45 |



|                                                                           | Page. |
|---------------------------------------------------------------------------|-------|
| <i>Gasteropoda.</i>                                                       |       |
| <i>Dentalium annulotriatum</i> , n. s., M. & W., 1870 .....               | 45    |
| <i>Strepapollus (Euomphalus) pernodensis</i> , n. s., M. & W., 1870 ..... | 45-46 |
| <i>S. (Euomphalus) subquadratus</i> , n. s., M. & W., 1870 .....          | 46-47 |
| <i>Subulites inflatus</i> , n. s., M. & W., 1870 .....                    | 47    |
| <i>Cephalopoda.</i>                                                       |       |
| <i>Nautilus</i> , Auct. ....                                              | 48    |
| Subgenus <i>Solenochilus</i> ,* M. & W., 1870 .....                       | 48    |
| <i>N. (Solenochilus) collectus</i> , n. s., M. & W., 1870 .....           | 48-49 |
| Subgenus <i>Temnochilus</i> , McCoy .....                                 | 49    |
| <i>N. (Temnochilus) latus</i> , n. s., M. & W., 1870 .....                | 49    |
| <i>N. (Temnochilus) winchowi</i> , n. s., M. & W., 1870 .....             | 50    |
| <i>N. (Temnochilus) comanus</i> , n. s., M. & W., 1870 .....              | 50-51 |
| <i>Lituites graftonensis</i> , n. s., M. & W., 1870 .....                 | 51-52 |
| <i>Crustacea.</i>                                                         |       |
| <i>Phillipsia tuberculata</i> , n. s., M. & W., 1870 .....                | 52    |
| <i>Phillipsia (Griffithides) bufö</i> , n. s., M. & W., 1870 .....        | 52-53 |
| <i>Asaphus (Isotelus) vigilans</i> , n. s., M. & W., 1870 .....           | 53-54 |
| <i>Iliaenus (Bumastus) graftonensis</i> , n. s., M. & W., 1870 .....      | 54-55 |
| <i>Dihyrocaris carbonarius</i> , n. s., M. & W., 1870 .....               | 55-56 |

67.

MEEK, F. B. Descriptions of Fossils collected by the U. S. Geological Survey under the charge of Clarence King, Esq. <Proc. Acad. Nat. Sci. Phila., vol. xxii, pp. 56-64. 1870. Philadelphia, 1870.

Silurian, Devonian, and Tertiary. Afterward republished and illustrated in vol. iv of Mr. King's series of final reports, 1877.

TERTIARY SPECIES.

|                                                                       | Page. |
|-----------------------------------------------------------------------|-------|
| <i>Spharium rugosum</i> , n. s., Meek, 1870 .....                     | 56-75 |
| <i>S. idahoense</i> , n. s., Meek, 1870 .....                         | 57    |
| <i>Ancylus undulatus</i> , n. s., Meek, 1870 .....                    | 57-58 |
| <i>Melania (Goniobasis ?) sculptilis</i> , n. s., Meek, 1870 .....    | 58    |
| <i>Melania (Goniobasis) subsculptilis</i> , n. s., Meek, 1870 .....   | 58-59 |
| <i>Carinifex binneyi</i> , n. s., Meek, 1870 .....                    | 59    |
| <i>Carinifex (Vorticifex) tryoni</i> , n. s., Meek, 1870 .....        | 59-60 |
| <i>Carinifex tryoni</i> var. <i>concava</i> , n. s., Meek, 1870 ..... | 59    |

DEVONIAN SPECIES.

|                                                                     |       |
|---------------------------------------------------------------------|-------|
| <i>Spirifer (Trigonotreta) pinonensis</i> , n. s., Meek, 1870 ..... | 60-61 |
|---------------------------------------------------------------------|-------|

LOWER SILURIAN SPECIES.

|                                                                         |       |
|-------------------------------------------------------------------------|-------|
| <i>Euomphalus (Raphistoma ?) rotuliformis</i> , n. s., Meek, 1870 ..... | 61    |
| <i>E. (Raphistoma) trochiscus</i> , n. s., Meek, 1870 .....             | 61-62 |
| <i>Paradoxides ? nevadensis</i> , n. s., Meek, 1870 .....               | 62-63 |
| <i>Conocoryphe (Conocephalites) kingii</i> , n. s., Meek, 1870 .....    | 63-64 |

68.

MEEK, F. B. Geology of the Line of the Great Pacific Railroad. [In a letter to Dr. J. J. Bigsby.] <Geological Magazine, Decade I, vol. vii, pp. 163-164. 1870. London, 1870.

Notes the fossils obtained by Mr. Clarence King along the line of the Pacific Railway.

\* σάλπιξ, a channel; Χάλος, lip.

## 69.

- MEEK, F. B. A Preliminary List of Fossils collected by Dr. Hayden in Colorado, New Mexico, and California, with Brief Descriptions of a few of the New Species. *Proc. Am. Philos. Soc.*, vol. xi, pp. 425-431. 1870. Philadelphia, 1871.
- Milurian, Carboniferous, Jurassic, Cretaceous, and Tertiary.

## SILURIAN SPECIES.

|                                                       | Page    |
|-------------------------------------------------------|---------|
| <i>Orthis coloradoensis</i> , n. s., Meek, 1871 ..... | 425-426 |
| <i>Lucanella nana</i> , n. s., Meek, 1871 .....       | 426     |

## CRETACEOUS SPECIES.

|                                                              |         |
|--------------------------------------------------------------|---------|
| <i>Ammonites serrato-carinatus</i> , n. s., Meek, 1871 ..... | 429-430 |
|--------------------------------------------------------------|---------|

## TERTIARY SPECIES.

|                                                             |     |
|-------------------------------------------------------------|-----|
| <i>Urtrea viduolus</i> , n. s., Meek, 1871 .....            | 430 |
| <i>Urtrea bulliplicatus</i> , n. s., ? Meek, 1871 .....     | 430 |
| <i>Cyrena (Corbicula) durkesi</i> , n. s., Meek, 1871 ..... | 431 |

## 70.

- MEEK, F. B. Preliminary notice of a new species of *Trimerella* from Ohio. *<Am. Journ. Sci., vol. i, 3d ser., pp. 305-306. 1871. New Haven, 1871.*
- Trimerella ohioensis*. Republished and illustrated in *Paleontology of Ohio (Newberry)*.

## 71.

- MEEK, F. B. On some new Silurian Crinoids and Shells. *<Am. Journ. Sci., vol. ii, 3d ser., pp. 295-302. 1871. New Haven, 1871.*

This article consists of descriptions of species, together with some extended remarks on the genus *Lichenocrinus* of Hall.

|                                                           | Page    |
|-----------------------------------------------------------|---------|
| <i>Dendrocrinus casei</i> , n. s., Meek, 1871 .....       | 295-296 |
| <i>Lepucrinites moorei</i> , n. s., Meek, 1871 .....      | 296-297 |
| <i>Andontopsis ? milleri</i> , n. s., Meek, 1871 .....    | 297-299 |
| <i>Andontopsis ? unionoides</i> , n. s., Meek, 1871 ..... | 299     |
| Remarks on the genus <i>Lichenocrinus</i> .....           | 299-302 |

## 72.

- MEEK, F. B. Descriptions of new species of invertebrate fossils from the Carboniferous and Devonian rocks of Ohio. *<Proc. Acad. Nat. Sci. Phila., vol. xliii, pp. 57-83. 1871. Philadelphia, 1871.*

*Echisauromata.*

|                                                      |       |
|------------------------------------------------------|-------|
| <i>Dolaturinus ornatus</i> , n. s., Meek, 1871 ..... | 57-59 |
|------------------------------------------------------|-------|

*Lamellibranchiata.*

|                                                                       |       |
|-----------------------------------------------------------------------|-------|
| <i>Anculopora crenistriatus</i> , n. s., Meek, 1871 .....             | 60-61 |
| <i>Anculopora (strobilopora ?) hertzeri</i> , n. s., Meek, 1871 ..... | 61-62 |
| <i>Lucina (Pararyclis) ohioensis</i> , n. s., Meek, 1871 .....        | 62-63 |
| <i>[Ptychodonta (Nidopora) gilberti]</i> , n. s., Meek, 1871 .....    | 63-64 |
| <i>Conuscardium ohioense</i> , n. s., Meek, 1871 .....                | 65-66 |
| <i>Anculomya (Janira) retusta</i> , n. s., Meek, 1871 .....           | 66-67 |
| <i>Chusquea antigua</i> , n. s., Meek, 1871 .....                     | 67-68 |
| <i>Chusqueoides ? anduskyensis</i> , n. s., Meek, 1871 .....          | 68-69 |
| <i>Chusqueoides ? obliquus</i> , n. s., Meek, 1871 .....              | 69-70 |
| <i>Aluruma (Hudgwickia ?) pleuropistha</i> , n. s., Meek, 1871 .....  | 70-71 |

\* This description was accidentally inserted by Mr. Meek in this place

|                                                                                       | Page. |
|---------------------------------------------------------------------------------------|-------|
| <i>Grammysia</i> ? <i>rhomboides</i> , n. s., Meek, 1871.....                         | 72-73 |
| <i>Grammysia ventricosa</i> , n. s., Meek, 1871.....                                  | 73    |
| <i>Gasteropoda.</i>                                                                   |       |
| <i>Platyceras multispinosum</i> , n. s., Meek, 1871.....                              | 73-75 |
| <i>Platyceras attenuatum</i> , n. s., Meek, 1871.....                                 | 75-76 |
| <i>Naticopsis levis</i> , n. s., Meek, 1871.....                                      | 76    |
| <i>Naticopsis</i> ( <i>Platystoma</i> ?) <i>aequistriata</i> , n. s., Meek, 1871..... | 76-77 |
| <i>Bellerophon newberryi</i> , n. s., Meek, 1871.....                                 | 77-78 |
| <i>Bellerophon propinquus</i> , n. s., Meek, 1871.....                                | 78    |
| <i>Cyclonema crenulata</i> , n. s., Meek, 1871.....                                   | 79    |
| <i>Isanema humilis</i> , n. s., Meek, 1871.....                                       | 79-80 |
| <i>Orthonema newberryi</i> , n. s., Meek, 1871.....                                   | 81    |
| <i>Trochita</i> ? <i>antiqua</i> , n. s., Meek, 1871.....                             | 82    |
| <i>Trochonema tricarinata</i> , n. s., Meek, 1871.....                                | 82-84 |
| <i>Pteropoda.</i>                                                                     |       |
| <i>Conularia micronema</i> , n. s., Meek, 1871.....                                   | 84    |
| <i>Conularia elegantula</i> , n. s., Meek, 1871.....                                  | 85-86 |
| <i>Cephalopoda.</i>                                                                   |       |
| <i>Cyrtoceras ohioense</i> , n. s., Meek, 1871.....                                   | 86-87 |
| <i>Gyroceras</i> ( <i>Trochoceras</i> ?) <i>ohioense</i> , n. s., Meek, 1871.....     | 87-88 |
| <i>Gyroceras</i> ( <i>Nautilus</i> ?) <i>inelegans</i> , n. s., Meek, 1871.....       | 89    |
| <i>Crustacea.</i>                                                                     |       |
| <i>Proetus planimarginatus</i> , n. s., Meek, 1871.....                               | 89-91 |
| <i>Dalmanites ohioensis</i> , n. s., Meek, 1871.....                                  | 91-93 |

73.

MECK, F. B. Descriptions of new species of fossils from Ohio and other Western States and Territories. <Proc. Acad. Nat. Sci. Phila., vol. xxiii, pp. 159-184. 1871. Philadelphia, 1871.

This paper contains descriptions of fossils, mostly Carboniferous, from Ohio, Illinois, and Texas, with a *Melantho* and *Viviparus* from Wyoming.

OHIO COLLECTIONS.

|                                                                                     | Page.   |
|-------------------------------------------------------------------------------------|---------|
| <i>Fenestella delicata</i> , n. s., Meek, 1871.....                                 | 159-160 |
| <i>Ptilodictya</i> ( <i>Stictopora</i> ) <i>carbonaria</i> , n. s., Meek, 1871..... | 160-161 |
| <i>Aviculopecten sanduskyensis</i> , n. s., Meek, 1871.....                         | 161-162 |
| <i>Pterinea</i> ( <i>Pteronites</i> ?) <i>newarkensis</i> , n. s., Meek, 1871.....  | 162-163 |
| <i>Cypriocardina</i> ? <i>carbonaria</i> , n. s., Meek, 1871.....                   | 163-165 |
| <i>Schizodus mediusensis</i> , n. s., Meek, 1871.....                               | 165-166 |
| <i>Schizodus subtrigonalis</i> , n. s., Meek, 1871.....                             | 166     |
| <i>Allorisma winchelli</i> , n. s., Meek, 1871.....                                 | 167-168 |
| <i>Allorisma ventricosa</i> , n. s., Meek, 1871.....                                | 168-169 |
| <i>Platystoma</i> ? <i>trigonostoma</i> , n. s., Meek, 1871.....                    | 169-170 |
| <i>Platyceras</i> ( <i>Orthonychia</i> ?) <i>lodiense</i> , n. s., Meek, 1871.....  | 170-171 |
| <i>Platyceras tortum</i> , n. s., Meek, 1871.....                                   | 171-172 |
| <i>Holopea</i> ( <i>Cyclora</i> ) <i>nana</i> , n. s., Meek, 1871.....              | 172     |
| <i>Orthoceras</i> ? <i>isogramma</i> , n. s., Meek, 1871.....                       | 172-173 |

ILLINOIS COLLECTIONS.

|                                                                       |         |
|-----------------------------------------------------------------------|---------|
| <i>Streptacis whitfieldi</i> , n. s., Meek, 1871.....                 | 173-174 |
| <i>Loxonema attenuata</i> , var. <i>semicostata</i> , Meek, 1871..... | 174-175 |
| <i>Murchisonia obsoleta</i> , n. s., Meek, 1871.....                  | 175     |
| <i>Pleurotomaria textiliger</i> , n. s., Meek, 1871.....              | 176-177 |
| <i>Pleurotomaria gurleyi</i> , n. s., Meek, 1871.....                 | 177-178 |

COLLECTIONS FROM MISSOURI, WYOMING, TEXAS, ETC.

|                                                                                  |         |
|----------------------------------------------------------------------------------|---------|
| <i>Aviculopecten</i> ? <i>williamsi</i> , n. s., Meek, 1871.....                 | 178-179 |
| <i>Spirifer</i> ( <i>Trigonotreta</i> ?) <i>texanus</i> , n. s., Meek, 1871..... | 179-181 |

|                                                                   | Page    |
|-------------------------------------------------------------------|---------|
| <i>Campeloma (Melanthis) macrospira</i> , n. s., Meek, 1871 ..... | 181-182 |
| <i>Viviparus? wyomingensis</i> , n. s., Meek, 1871 .....          | 182-183 |
| <i>Isocardia? hodgesi</i> , n. s., Meek, 1871 .....               | 183-184 |

## 74.

MEEK, F. B. Notice of a new Brachiopod, from the lead-bearing rocks at Mine La Motte, Missouri. <Proc. Acad. Nat. Sci. Phila., vol. xxiii, pp. 185-187. 4 woodcuts. 1871. Philadelphia, 1871.

|                                                                       | Page    |
|-----------------------------------------------------------------------|---------|
| <i>Lingulella lambornii</i> , n. s., Meek, 1871, p. 185, fig. 1 ..... | 185-187 |
| <i>Lingulella darwini</i> (Salter), Davidson, figs. 2 and 3 .....     | 185-187 |
| <i>Lingulepis pinniformis</i> , Hall, fig. 4 .....                    | 185-187 |

## 75.

MEEK, F. B. Descriptions of new Western Paleozoic fossils, mainly from the Cincinnati Group of the Lower Silurian series of Ohio. <Proc. Acad. Nat. Sci. Phila., vol. xxiii, pp. 308-336. 1872. Philadelphia, 1871.

Afterward redescribed and illustrated in the Paleontology of Ohio (Newberry).

## Ecdiata.

## Echinodermata.

|                                                                                 | Page    |
|---------------------------------------------------------------------------------|---------|
| <i>Heterocrinus exiguus</i> , n. s., Meek, 1872 .....                           | 308-310 |
| <i>Heterocrinus subcrassus</i> , M. & W., 1865 .....                            | 310     |
| <i>Poteriocrinites (Dendrocrinus) dyeri</i> , n. s., Meek, 1872 .....           | 310-313 |
| <i>Poteriocrinites (Dendrocrinus) cincinnatiensis</i> , n. s., Meek, 1872 ..... | 313-314 |
| <i>Poteriocrinus (Dendrocrinus) polydactylus</i> , Shumard, sp., 1867 .....     | 314     |
| <i>Glyptocrinus dyeri</i> , n. s., Meek, 1872 .....                             | 314-316 |
| <i>Glyptocrinus dyeri</i> , var. <i>subglobosus</i> , Meek, 1872 .....          | 316-317 |

## Mollusca.

## Polyzoa.

|                                                                   |         |
|-------------------------------------------------------------------|---------|
| <i>Paludactya (Stictopora) shuferti</i> , n. s., Meek, 1872 ..... | 317-318 |
|-------------------------------------------------------------------|---------|

## Echinozoa.

|                                                                    |         |
|--------------------------------------------------------------------|---------|
| <i>Kotzia (Trematospira) granulifera</i> , n. s., Meek, 1872 ..... | 318-319 |
|--------------------------------------------------------------------|---------|

## Lamellibranchiata.

|                                                                            |         |
|----------------------------------------------------------------------------|---------|
| <i>Leptomychia (Myopteria) alata</i> , n. s., Meek, 1872 .....             | 319-321 |
| <i>Myopteria (Myopteria) pumila</i> , n. s., Meek, 1872 .....              | 321-322 |
| <i>Myopteria (Myopteria) fragilis</i> , n. s., Meek, 1872 .....            | 322     |
| <i>Myopteria (Myopteria) compressa</i> , n. s., Meek, 1872 .....           | 324-325 |
| <i>Myopteria (Myopteria) Grammysia? neglecta</i> , n. s., Meek, 1872 ..... | 325-326 |
| <i>Myopteria (Myopteria) carinata</i> , n. s., Meek, 1872 .....            | 326-327 |
| <i>Myopteria (Myopteria) obliquata</i> , n. s., Meek, 1872 .....           | 327-328 |

## Gastropoda.

|                                                                 |         |
|-----------------------------------------------------------------|---------|
| <i>Myopteria (Myopteria) biggiani</i> , n. s., Meek, 1872 ..... | 328-329 |
|-----------------------------------------------------------------|---------|

## Echinozoa.

|                                                             |         |
|-------------------------------------------------------------|---------|
| <i>Myopteria (Myopteria) tima</i> , n. s., Meek, 1872 ..... | 329-331 |
|-------------------------------------------------------------|---------|

## Echinozoa.

|                                                             |         |
|-------------------------------------------------------------|---------|
| <i>Myopteria (Myopteria) tima</i> , n. s., Meek, 1872 ..... | 331-332 |
|-------------------------------------------------------------|---------|

|                                                             |         |
|-------------------------------------------------------------|---------|
| <i>Myopteria (Myopteria) tima</i> , n. s., Meek, 1872 ..... | 332-333 |
|-------------------------------------------------------------|---------|

|                                                             |     |
|-------------------------------------------------------------|-----|
| <i>Myopteria (Myopteria) tima</i> , n. s., Meek, 1872 ..... | 333 |
|-------------------------------------------------------------|-----|

|                                                             |     |
|-------------------------------------------------------------|-----|
| <i>Myopteria (Myopteria) tima</i> , n. s., Meek, 1872 ..... | 335 |
|-------------------------------------------------------------|-----|

|                                                             |         |
|-------------------------------------------------------------|---------|
| <i>Myopteria (Myopteria) tima</i> , n. s., Meek, 1872 ..... | 335-336 |
|-------------------------------------------------------------|---------|

## 76.

MEEK, F. B. Descriptions of some new types of Paleozoic shells. <Am. Journ. Sci., vol. xlii, pp. 4-11. 1 plate. 1871-1872. Philadelphia, 1872.

Afterward redescribed and illustrated in the Paleontology of Ohio (Newberry).

|                                                             | Page |
|-------------------------------------------------------------|------|
| <i>Myopteria (Myopteria) tima</i> , n. s., Meek, 1872 ..... | 4    |
| <i>Myopteria (Myopteria) tima</i> , n. s., Meek, 1872 ..... | 4-5  |

|                                                                          | Page. |
|--------------------------------------------------------------------------|-------|
| <i>S. (Promacrus) nasutus</i> , n. s., Meek, 1871, pl. i, fig. 1 .....   | 6-7   |
| <i>S. (Promacrus) missouriensis</i> , Swallow, 1860, pl. i, fig. 2 ..... | 8     |
| <i>Prothyris</i> , Meek, 1860 .....                                      | 8-9   |
| <i>P. elegans</i> , n. s., Meek, 1871, pl. i, fig. 3 .....               | 9-10  |
| <i>Martesia? rassleri</i> , n. s., Meek, 1871, pl. i, figs. 4, 4 a ..... |       |

77.

MEK, F. B. List of Carboniferous fossils from West Virginia, with descriptions of new species. <Appendix B, Report of Regents of West Virginia University for 1870, pp. 67-73 or 1-7. 1871. Wheeling, 1871.

|                                                             | Page. |
|-------------------------------------------------------------|-------|
| <i>Macrodon obsoletus</i> , n. s., Meek, 1871 .....         | 5     |
| <i>Nucula? anodontoides</i> , n. s., Meek, 1871 .....       | 5-6   |
| <i>Yoldia stevensoni</i> , n. s., Meek, 1871 .....          | 6     |
| <i>Yoldia (Palaeonotus?) carbonaria</i> , n. s., Meek ..... | 6-7   |
| <i>Phillipsia stevensoni</i> , n. s., Meek, 1871 .....      | 7     |

78.

MEK, F. B. Remarks on the Genus *Lichenocrinus*. <Ann. and Mag. Nat. Hist., ser. 4, vol. viii, pp. 341-345. 1871. London, 1871.

A reprint from Amer. Journ. Sci. & Arts, 1871. See entry number 71.

79.

MEK, F. B. Supplementary note on the Genus *Lichenocrinus*. <Ann. and Mag. Nat. Hist., ser. 4, vol. ix, pp. 247-248. 1872. London, 1872.

An additional description of the characters of *Lichenocrinus*, founded on a number of fresh specimens. The author concludes that it is an aberrant type of *Cystoidea*, representing a distinct family. See entry number 80.

80.

MEK, F. B. Supplementary Note on the Genus *Lichenocrinus*. <Am. Journ. Sci., vol. iii, 3d ser., pp. 15-17. 1872. New Haven, 1872.

This is supplementary to the article at page 299 of vol. ii. See entry numbers 71 and 79.

81.

MEK, F. B. Descriptions of two new starfishes, and a Crinoid, from the Cincinnati group of Ohio and Indiana. <Am. Journ. Sci., vol. iii, 3d ser., pp. 257-262. 1872. New Haven, 1872.

These descriptions, with illustrations, are republished in the *Paleontology of Ohio* (Newberry).

|                                                     | Page.   |
|-----------------------------------------------------|---------|
| <i>Palaeaster? dyeri</i> , n. s., Meek, 1872 .....  | 257-258 |
| <i>Stenaster grandis</i> , n. s., Meek, 1872 .....  | 258-259 |
| <i>Glyptocrinus baeri</i> , n. s., Meek, 1872 ..... | 260-261 |
| Note on the Genus <i>Lichenocrinus</i> .....        | 261-262 |

82.

MEK, F. B. Descriptions of New Species of Fossils from the Cincinnati Group of Ohio. <Am. Journ. Sci., vol. iii, 3d ser., pp. 423-428. 1872. New Haven, 1872.

These have since been redescribed and figured in the *Paleontology of Ohio* (Newberry).

|                                                                               | Page.   |
|-------------------------------------------------------------------------------|---------|
| <i>Anomalocystites (Ateleocystites?) balanoides</i> , n. s., Meek, 1872 ..... | 423-424 |
| <i>Dalmanites carleyi</i> , n. s., Meek, 1872 .....                           | 424-426 |
| <i>Proetus spurlocki</i> , n. s., Meek, 1872 .....                            | 426-428 |



## 83.

MEEK, F. B. Descriptions of a few new species and one new genus of Silurian fossils from Ohio. <Am. Journ. Sci., vol. iv, 3d ser., pp. 274-281 1872. New Haven, 1872.

Genus *Dicraniscus*, afterward fully described and illustrated in the *Paleontology of Ohio* (Newberry).

|                                                                                         | Page.   |
|-----------------------------------------------------------------------------------------|---------|
| <i>Protaster? granuliferus</i> , n. s., Meek, 1872 .....                                | 274-275 |
| <i>Palaeaster incomptus</i> , n. s., Meek, 1872 .....                                   | 275-277 |
| <i>Rhynchonella neglecta</i> var. <i>scobina</i> , Meek, 1872 .....                     | 277-278 |
| <i>Pleurotomaria</i> ( <i>Scalites?</i> ) <i>tropidophora</i> , n. s., Meek, 1872 ..... | 278-279 |
| * <i>Dicraniscus</i> , n. g., Meek, 1872 .....                                          | 279-280 |
| <i>D. ortonii</i> , n. s., Meek, 1872 .....                                             | 280-281 |

## 84.

MEEK, F. B. Preliminary Paleontological report consisting of lists of fossils, with descriptions of some new types, &c. <Prelim. Rep. U. S. Geol. Surv. of Wyoming and Portions of Contiguous Territories, pp. 287-318. 1870. Washington.

Silurian, Carboniferous, Jurassic, Cretaceous, and Tertiary, Genera *Arcopagella*, *Crassatellina*, *Leptesthes*, *Pyrgulifera*.

|                                              | Page.   |
|----------------------------------------------|---------|
| General remarks .....                        | 287-295 |
| Pyrgulifera, n. g., Meek, 1871 .....         | 294     |
| Lists of fossils collected .....             | 295-299 |
| Descriptions of new species and genera ..... | 299-318 |

## CARBONIFEROUS SPECIES.

|                                                          | Page.   |
|----------------------------------------------------------|---------|
| <i>Edmondia aspencallensis</i> , n. s., Meek, 1871 ..... | 299-300 |

## CRETACEOUS FORMS.

|                                                                                  |          |
|----------------------------------------------------------------------------------|----------|
| <i>Crassatellina</i> , n. g., Meek, 1871 .....                                   | 300, 301 |
| <i>C. oblonga</i> , n. s., Meek, 1871, figs. A & B, p. 301 .....                 | 301      |
| <i>Pachymya? truncata</i> , n. s., Meek, 1871 .....                              | 301-302  |
| <i>Inoceramus altus</i> , n. s., Meek, 1871 .....                                | 302-303  |
| <i>Unio</i> ( <i>Baphia?</i> ) <i>nebrascensis</i> , n. s., Meek, 1871 .....     | 303      |
| <i>Area? parallela</i> , n. s., Meek, 1871 .....                                 | 303-304  |
| <i>Yoldia microdonta</i> , n. s., Meek, 1871 .....                               | 304      |
| <i>Corbicula nucalis</i> , n. s., Meek, 1871 .....                               | 304-305  |
| <i>Corbicula? subtrigonalis</i> , n. s., Meek, 1871 .....                        | 305-306  |
| <i>Cardium pauperculum</i> , n. s., Meek, 1871 .....                             | 306      |
| <i>Cardium</i> ( <i>Protocardia</i> ) <i>salinense</i> , n. s., Meek, 1871 ..... | 306-307  |
| <i>Cardium kansasense</i> , n. s., Meek, 1871 .....                              | 307-308  |
| <i>Mactra? cañonensis</i> , n. s., Meek, 1871 .....                              | 308      |
| <i>Arcopagella</i> , n. g., Meek, 1871 .....                                     | 308      |
| <i>A. mactroides</i> , n. s., Meek, 1871, figs. A and B, p. 309 .....            | 309-310  |
| <i>Tellina subacutula</i> , n. s., Meek, 1871 .....                              | 310      |
| <i>Tapes wyomingensis</i> , n. s., Meek, 1871 .....                              | 310-311  |
| <i>Leptosolen conradi</i> , n. s., Meek, 1871 .....                              | 311-312  |
| <i>Anisomyon centrale</i> , n. s., Meek, 1871 .....                              | 312      |
| <i>Turritella kansasensis</i> , n. s., Meek, 1871 .....                          | 312-313  |
| <i>Turbo mudgeanus</i> , n. s., Meek, 1871 .....                                 | 313      |

## TERTIARY SPECIES.

|                                                              |         |
|--------------------------------------------------------------|---------|
| <i>Unio leanus</i> , n. s., Meek, 1871 .....                 | 313-314 |
| <i>U. washakiensis</i> , n. s., Meek, 1871 .....             | 314     |
| <i>Corbicula? fracta</i> , n. s., Meek, 1871 .....           | 314-315 |
| <i>Corbicula crassatelliformis</i> , n. s., Meek, 1871 ..... | 315-316 |
| <i>Goniobasis chrysalis</i> , n. s., Meek, 1871 .....        | 316     |
| <i>Goniobasis nodulifera</i> , n. s., Meek, 1871 .....       | 316-317 |
| <i>Bythinella gregaria</i> , n. s., Meek, 1871 .....         | 317-318 |

\* Diminutive of *diapavos* a two-pronged fork.

85.

EEK, F. B. Preliminary list of the fossils collected by Dr. Hayden's exploring expedition of 1871 in Utah and Wyoming Territories, with descriptions of a few new species. <Prelim. Rep. of U. S. Geol. Surv. of Montana and portions of adjacent Territories. [Report for 1871,] pp. 373-377. 1872. Washington, 1872.

|                                                                                            | Page.   |
|--------------------------------------------------------------------------------------------|---------|
| Silurian fossils.....                                                                      | 373     |
| Carboniferous fossils.....                                                                 | 373-374 |
| <i>Platyerinites</i> ( <i>Eucladocrinus</i> ) <i>montanaensis</i> , n. s., Meek, 1872..... | 373-374 |
| Jurassic species.....                                                                      | 374-375 |
| <i>Aviculopecten</i> ( <i>Pseudomonotis</i> ?) <i>idahoensis</i> , n. s., Meek, 1872.....  | 374-375 |
| Cretaceous species.....                                                                    | 375-376 |
| <i>Ostrea idriaensis</i> , Gabb?.....                                                      | 375     |
| <i>Anomia</i> ? <i>gryphorhynchus</i> , n. s., Meek, 1872.....                             | 375-376 |
| Tertiary species.....                                                                      | 376     |

EEK, F. B. Report on the Paleontology of Eastern Nebraska, with some remarks on the Carboniferous rocks of that district. <Final Rep. of the U. S. Geol. Surv. of Nebraska and portions of the adjacent Territories, pp. 83-239. 11 plates. Washington, 1872.

Carboniferous fossils only. Genus *Rhombopora*.

|                                                                                                                                                                       | Page.   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Introductory remarks.....                                                                                                                                             | 83      |
| Statement of a boring made in the Missouri Valley at Omaha City, by the Union Pacific Railroad Company, starting 22 feet above low-water mark of the Missouri.....    | 87-88   |
| Section of beds exposed at Bellevue, with an enumeration of the fossils found in each..                                                                               | 89      |
| Section of the beds exposed on the north side of Platte River, between three and four miles from its mouth, with an enumeration of the fossils found in each bed..... | 90-91   |
| Section of the beds exposed at Plattsmouth, with the names of the fossils found in each.....                                                                          | 93      |
| Section of the beds exposed at Rock Bluff, on the Missouri, with a statement of the fossils found in each.....                                                        | 95-96   |
| Section of the rocks seen at Cedar Bluff.....                                                                                                                         | 98      |
| Section at Wyoming, with an enumeration of the imbedded fossils.....                                                                                                  | 99      |
| Section at Bennett's mill.....                                                                                                                                        | 100     |
| Section of beds exposed at the Nebraska City landing, with an enumeration of the fossils found in each.....                                                           | 101-102 |
| Section 1½ and 2½ miles due west of Nebraska City.....                                                                                                                | 103     |
| Mr. Croxton's boring at Nebraska City.....                                                                                                                            | 105-107 |
| Section of the beds exposed at Otoe City.....                                                                                                                         | 107-108 |
| Sections of the various beds exposed at Brownville.....                                                                                                               | 110     |
| Sections one and a half miles below Brownville.....                                                                                                                   | 111-112 |
| Sections of beds exposed at Aspinwall.....                                                                                                                            | 112-113 |
| Section two miles above Rulo, on the Missouri.....                                                                                                                    | 114     |
| Shaft and boring one and one-fourth miles south of Rulo.....                                                                                                          | 115     |
| Section of a boring two miles south of Saint Joseph, 60 feet above high water of the Missouri.....                                                                    | 117-118 |
| Section of the rocks exposed at Riverside, Kansas, and along the river bluff between there and the Atchison Landing.....                                              | 119-120 |
| Boring at Atchison, Kansas, commencing 22½ feet above high-water mark of the Missouri; made by the Atchison Coal Company, 1865-'66.....                               | 121-122 |
| Tabular list, illustrating the geological and geographical range of the fossils of Eastern Nebraska.....                                                              | 124-127 |
| Remarks on the probability of finding valuable beds of coal within profitable working distance of the surface in Eastern Nebraska.....                                | 134-139 |

DESCRIPTIONS OF FOSSILS.

Protozoa.

*Foraminifera*.

*Fusulina*, Fischer.

*F. cylindrica*, Fischer, 1837, pl. i, fig. 2; pl. ii, fig. 1; pl. v, figs. 3 a, b; pl. vii, figs. 8 a, b.. 140-141

*Radiata*.

*Polypti*.

*Rhombopora*, Meek, n. g., 1872..... 141

*R. lepidodendroides*, n. s., Meek, 1872, pl. vii, figs. 2 a-f..... 141-143

*Fatuliopora*, McCoy..... 143



|                                                                                                                                        | Page    |
|----------------------------------------------------------------------------------------------------------------------------------------|---------|
| <i>F. nodulifera</i> , n. s., Meek, 1872, pl. v, figs. 5 a-d.....                                                                      | 143-144 |
| <i>Syringopora</i> , Goldfuss.....                                                                                                     | 144     |
| <i>S. multattenuata</i> , McChesney, 1860, pl. i, figs. 5 a-d.....                                                                     | 144     |
| <i>Lophophyllum</i> , Edwards & Haimé.....                                                                                             | 144     |
| <i>L. proliferum</i> , McChesney, sp., 1860, pl. v, figs. 4 a, b.....                                                                  | 144-145 |
| <i>Campophyllum</i> , Edwards & Haimé.....                                                                                             | 145     |
| <i>O. torquium</i> , Owen, sp., 1852, pl. i, figs. 1 a-d.....                                                                          | 145-146 |
| <i>Echinodermata.</i>                                                                                                                  |         |
| <i>Erisocrinus</i> , M. & W.....                                                                                                       | 146     |
| <i>E. typus</i> , M. & W., 1865, pl. i, figs. 3 a, b, and fig. 1, p. 146.....                                                          | 146-147 |
| <i>Scaphiocrinus</i> , Hall.....                                                                                                       | 147     |
| <i>S. ? hemisphaericus</i> , Shumard, sp., 1858, pl. v, figs. 1 a, b; pl. vii, figs. 1 a-c, and fig. 2, p. 148.....                    | 147-149 |
| <i>Zeacrinus</i> , Troost.....                                                                                                         | 149     |
| <i>Z. ? mucroptinus</i> , McChesney, 1860, pl. v, figs. 2 a-c.....                                                                     | 149-150 |
| <i>Eupachycrinus</i> , M. & W.....                                                                                                     | 150     |
| <i>E. verrucosus</i> , White & St. John, 1869, figs. 3 and 4 a-d, p. 150.....                                                          | 150-151 |
| <i>Archæocidaris</i> , McCoy.....                                                                                                      | 151     |
| <i>A. ? triseriata</i> , n. s., Meek, 1872, pl. i, figs. 6 a-c.....                                                                    | 151-152 |
| <i>Cidaris</i> , Desor.....                                                                                                            | 152     |
| <i>E. hallianus</i> , Geinitz, 1860, pl. vii, figs. 9 a-d.....                                                                         | 152     |
| <i>Mollusca.</i>                                                                                                                       |         |
| <i>Polypoda.</i>                                                                                                                       |         |
| <i>Fenestella</i> , Lonsdale.....                                                                                                      | 152     |
| <i>Fenestella</i> , sp., pl. i, figs. 4 a, b.....                                                                                      | 152-153 |
| <i>F. shumardi</i> , Prout f, 1858, pl. vii, figs. 3 a-c.....                                                                          | 153-154 |
| <i>Polypora</i> , McCoy.....                                                                                                           | 154     |
| <i>P. submarginata</i> , n. s., Meek, 1872, pl. vii, figs. 7 a, b.....                                                                 | 154-155 |
| <i>Polypora</i> , sp. undt., Meek, pl. vii, figs. 6.....                                                                               | 155     |
| <i>Synocladia</i> , King.....                                                                                                          | 156     |
| <i>S. biserialis</i> , Swallow, 1858, pl. vii, figs. 5 a-c.....                                                                        | 156-157 |
| <i>Glaucanome</i> , Goldfuss.....                                                                                                      | 157     |
| <i>G. trilineata</i> , Meek, n. s., 1872, pl. vii, figs. 4 a-d.....                                                                    | 157-158 |
| <i>Brachiopoda.</i>                                                                                                                    |         |
| <i>Lingula</i> , Bruguière.....                                                                                                        | 158     |
| <i>L. scotica</i> , var. <i>nebrascensis</i> , Meek, 1872, pl. viii, figs. 3 a, b.....                                                 | 158     |
| <i>Orbiculoidea</i> , d'Orbigny.....                                                                                                   | 158     |
| <i>Orbiculoidea</i> , sp., pl. iv, fig. 3.....                                                                                         | 158-159 |
| <i>Productus</i> , Sowerby.....                                                                                                        | 159     |
| <i>P. costatus</i> , Sowerby II sp., 1827, pl. vi, figs. 6 a, b.....                                                                   | 159-160 |
| <i>P. semireticulatus</i> , Martin, sp., 1809, pl. v, figs. 7 a, b.....                                                                | 160-161 |
| <i>P. longispinus</i> , Sowerby, ? 1814, pl. vi, fig. 7, and pl. viii, figs. 6 a-c.....                                                | 161-163 |
| <i>P. grattenianus</i> , Norwood, 1854, pl. ii, figs. 5 a-c, pl. v, fig. 13, and pl. viii, figs. 10 a, b.....                          | 163-164 |
| <i>P. pertenuis</i> , n. s., Meek, 1872, pl. i, figs. 14 a-c, and pl. viii, figs. 9 a-d.....                                           | 164-165 |
| <i>P. nebrascensis</i> , Owen, 1852, pl. ii, fig. 2, pl. iv, fig. 6, and pl. v, figs. 11 a-c.....                                      | 165-167 |
| <i>P. symmetricus</i> , McChesney, 1860, pl. v, figs. 6 a, b, and pl. viii, fig. 13.....                                               | 167-168 |
| <i>P. punctatus</i> , Martin, sp., 1809, pl. ii, fig. 6, and pl. iv, fig. 5.....                                                       | 169     |
| <i>Chonetes</i> , Fischer.....                                                                                                         | 170     |
| <i>C. verneuilliana</i> , Norwood & Pratten, 1854, pl. i, figs. 10 a, b.....                                                           | 170     |
| <i>C. granulifera</i> , Owen, 1855, pl. iv, fig. 9, pl. vi, fig. 10, pl. viii, fig. 7.....                                             | 170-171 |
| <i>C. glabra</i> , Geinitz, 1860, pl. iv, fig. 10, pl. viii, figs. 8 a, b.....                                                         | 171-172 |
| <i>Orthis</i> , Dalman.....                                                                                                            | 173     |
| <i>O. carbonaria</i> , Swallow, 1858, pl. i, figs. 8 a-c.....                                                                          | 173     |
| <i>Hemipronites</i> .....                                                                                                              | 173     |
| <i>H. crassus</i> , M. & H., 1858, pl. v, figs. 10 a-c, and pl. viii, fig. 1.....                                                      | 174-175 |
| <i>Meekella</i> , White & St. John.....                                                                                                | 175     |
| <i>M. striato-costata</i> , Cox, sp., 1857, pl. v, figs. 12 a-c, and figs. 5 a, b, and 6, p. 175.....                                  | 175-177 |
| <i>Syntrielaema</i> , M. & W.....                                                                                                      | 177     |
| <i>S. hemiplicata</i> , Hall, sp., 1852, pl. vi, figs. 1 a, b, and pl. viii, figs. 12 a, b, and figs. 7 a-c, figs. 8 a, b, p. 177..... | 177-178 |
| <i>Rhynchonella</i> , Fischer.....                                                                                                     | 179     |
| <i>R. osagensis</i> , Swallow, 1858, pl. i, figs. 9 a, b, and pl. vi, figs. 2 a, b.....                                                | 179-180 |
| <i>Athyris</i> , McCoy.....                                                                                                            | 180     |
| <i>A. subtilita</i> , Hall, sp., 1852, pl. i, fig. 12, pl. v, fig. 8, and pl. viii, fig. 4.....                                        | 180-181 |
| <i>Retzia</i> , King.....                                                                                                              | 181     |

|                                                                                                           | Page.   |
|-----------------------------------------------------------------------------------------------------------|---------|
| <i>R. punctulifera</i> , Shumard, 1858, pl. i, fig. 13, and pl. v, fig. 7.....                            | 181-183 |
| <i>Spirifer</i> , Sowerby.....                                                                            | 183     |
| <i>S. cameratus</i> , Morton, 1836, pl. vi, fig. 12, and pl. viii, fig. 15.....                           | 183-184 |
| <i>S. (Martinia) planoconvexus</i> , Shumard, 1855, pl. iv, figs. 4 a, b, and pl. viii, figs. 2 a, b..... | 184-185 |
| <i>Spiriferina</i> , d'Orbigny.....                                                                       | 185     |
| <i>S. kentuckensis</i> , Shumard, 1855, pl. vi, figs. 3 a-d, and pl. viii, figs. 11 a, b.....             | 185-186 |
| <i>Terebratula</i> , Llbwyd.....                                                                          | 187     |
| <i>T. boidensis</i> , Morton, 1836, pl. i, figs. 7 a-d, and pl. ii, fig. 4.....                           | 187-188 |
| <i>Lamellibranchiata</i> .                                                                                |         |
| <i>Lima</i> , Bruguière.....                                                                              | 188     |
| <i>L. retifera</i> , Shumard, 1855, pl. ix, fig. 5.....                                                   | 188-189 |
| <i>Entolium</i> , Meek.....                                                                               | 189     |
| <i>E. aviculatum</i> , Swallow, sp., 1858, pl. ix, figs. 11 a-f.....                                      | 189-191 |
| <i>Ariculopecten</i> , McCoy.....                                                                         | 191     |
| <i>A. occidentalis</i> , Shumard, sp., 1855, pl. ix, fig. 10.....                                         | 191-193 |
| <i>A. neglectus</i> , Geinitz, sp., 1866, pl. ix, figs. 1 a, b.....                                       | 193     |
| <i>A. carboniferus</i> , Stevens, sp., 1858, pl. iv, fig. 8 and pl. ix, figs. 4 a, b.....                 | 193-195 |
| <i>A. whitei</i> , n. s., Meek, 1872, pl. iv, figs. 11 a-c.....                                           | 195     |
| <i>A. coxanus</i> , M. & W., 1860, pl. ix, figs. 2 a, b.....                                              | 196     |
| <i>Ariculopinna</i> , Meek.....                                                                           | 197     |
| <i>A. americana</i> , Meek, 1867, pl. ix, figs. 12 a-d.....                                               | 197-198 |
| <i>Pinna</i> , Linnæus.....                                                                               | 198     |
| <i>P. peracuta</i> , Shumard, 1858, pl. vi, fig. 11 a, b.....                                             | 198     |
| <i>Aricula</i> (Klein), Brug.....                                                                         | 199     |
| <i>A. longa</i> , Geinitz, sp., 1866, pl. ix, fig. 8.....                                                 | 199     |
| <i>A. ? sulcata</i> , Geinitz, 1866, pl. ix, fig. 9.....                                                  | 200     |
| <i>Pseudomonotis</i> , Beyrich.....                                                                       | 200     |
| <i>Pseudomonotis</i> , sp., pl. ii, fig. 11.....                                                          | 200-201 |
| <i>P. radialis</i> , Phillips ? sp., 1834, pl. ix, fig. 3.....                                            | 201     |
| <i>Myalina</i> , de Koninck.....                                                                          | 201     |
| <i>M. [?] swallovi</i> , McCheaney, 1860, pl. ix, figs. 7 a, b.....                                       | 201-202 |
| <i>M. subquadrata</i> , Shumard, 1855, pl. iv, fig. 12 and pl. ix, fig. 6.....                            | 202-203 |
| <i>Nucula</i> , Lamarck.....                                                                              | 203     |
| <i>N. beyrichi</i> , v. Schanroth ? 1854, pl. x, fig. 18.....                                             | 203-204 |
| <i>N. ventricosa</i> , Hall, 1858, pl. x, figs. 17 a-c.....                                               | 204-205 |
| <i>Foldia</i> , Möller.....                                                                               | 205     |
| <i>F. subscitula</i> , M. & H., ? 1858, pl. x, fig. 10.....                                               | 205-206 |
| <i>Nuculana</i> , Link.....                                                                               | 206     |
| <i>N. bellistriata</i> var. <i>attenuata</i> , pl. x, figs. 11 a, b.....                                  | 206-207 |
| <i>Macrodon</i> , Lycett.....                                                                             | 207     |
| <i>M. tenuistriata</i> , M. & W., 1867, pl. x, figs. 20 a, b.....                                         | 207-208 |
| <i>Schizodus</i> , King.....                                                                              | 208     |
| <i>S. curtus</i> , M. & W., ? 1866, pl. x, figs. 13 a-c (d ?), e.....                                     | 208-209 |
| <i>S. wheeleri</i> , Swallow, sp., 1862, pl. x, figs. 1 a-d (and e, f ?).....                             | 209-210 |
| <i>Schizodus</i> , undt. pl. x, fig. 2.....                                                               | 210-211 |
| <i>Modiola</i> , Lamarck.....                                                                             | 211     |
| <i>M. ? subelliptica</i> , Meek, 1867, pl. x, fig. 5.....                                                 | 211-212 |
| <i>Pleurophorus</i> , King.....                                                                           | 212     |
| <i>P. oblongus</i> , n. s., Meeks, 1872, pl. x, fig. 4 a-c.....                                           | 212     |
| <i>P. occidentalis</i> , M. & H., ? 1858, pl. x, fig. 12.....                                             | 212-213 |
| <i>Edmondia</i> , de Koninck.....                                                                         | 213     |
| <i>E. reflexa</i> , n. s., Meek, 1872, pl. x, figs. 6 a, b, and pl. iv, fig. 7 ?.....                     | 213-214 |
| <i>E. ? glabra</i> n. s., Meek, 1872, pl. x, figs. 7 a, b.....                                            | 214     |
| <i>E. ? nebrascensis</i> , Geinitz, sp., 1866, pl. x, figs. 8 a, b.....                                   | 214-215 |
| <i>E. subtruncata</i> n. s., Meek, 1872, pl. ii, fig. 7.....                                              | 215-216 |
| <i>E. aspinwallensis</i> , Meek, 1871, pl. iv, figs. 2 a-c.....                                           | 216     |
| <i>Chenomya</i> , M. & H.....                                                                             | 216     |
| <i>C. leavenworthensis</i> , M. & H., 1858, pl. ii, fig. 9.....                                           | 216-217 |
| <i>C. minchaha</i> , Swallow, sp., 1858, pl. — figs. 13 a, b.....                                         | 217     |
| <i>Altorienia</i> , King.....                                                                             | 217     |
| <i>A. (Sedgwickia) reflexa</i> , n. s., Meek, 1872, pl. x, fig. 15.....                                   | 217-218 |
| <i>A. (Sedgwickia) geinitzii</i> , Meek, 1867, pl. x, figs. 16 a, b.....                                  | 219     |
| <i>A. (Sedgwickia ?) subelegans</i> n. s., Meek, 1872, pl. x, fig. 14.....                                | 220     |
| <i>A. (Sedgwickia) granosa</i> , Shumard, sp., 1858, pl. ii, fig. 8.....                                  | 220-221 |
| <i>A. subcuneata</i> , M. & H., 1858, pl. ii, figs. 10 a, b.....                                          | 221-222 |



|                                                                                                   | Page.   |
|---------------------------------------------------------------------------------------------------|---------|
| <i>Prothyris</i> , Meek .....                                                                     | 223     |
| <i>P. elegans</i> , Meek, 1871, pl. x, figs. 9 a, b .....                                         | 223     |
| <i>Solenopsis</i> , McCoy .....                                                                   | 223     |
| <i>S. solenoides</i> , Geinitz, sp., 1866, pl. x, fig. 3 .....                                    | 223-224 |
| <i>Gasteropoda</i> , Cuvier.                                                                      |         |
| <i>Dentalium</i> , Linnæus .....                                                                  | 224     |
| <i>D. meekianum</i> , Geinitz, 1866, pl. xi, figs. 16 a, b .....                                  | 224     |
| <i>Bellerophon</i> , Montfort .....                                                               | 224     |
| <i>B. carbonarius</i> , Cox, 1857, pl. iv, fig. 16, pl. xi, figs. 11 a-c .....                    | 224-225 |
| <i>B. montfortianus</i> , Norwood & Pratten, 1855, pl. xi, fig. 15, and 12 f .....                | 225-226 |
| <i>B. marcouianus</i> , Geinitz, 1866, pl. iv, fig. 17, and pl. xi, figs. 13 a, b .....           | 226-227 |
| <i>B. percarinatus</i> , Conrad, 1842, pl. xi, fig. 14 .....                                      | 227     |
| <i>Platyceras</i> , Conrad .....                                                                  | 227     |
| <i>P. nebrascensis</i> , n. s., Meek, 1872, pl. iv, figs. 15 a, b .....                           | 227-228 |
| <i>Macrocheilus</i> , Phillips .....                                                              | 228     |
| <i>M. intercalaris</i> var. <i>pulchellus</i> , M. & W., 1860, pl. vi, fig. 8 .....               | 228     |
| <i>Orthonema</i> , M. & W .....                                                                   | 228     |
| <i>O. subtaeniata</i> , Geinitz, sp., 1866, pl. xi, fig. 10 .....                                 | 228-229 |
| <i>Actis</i> , Loven .....                                                                        | 229     |
| <i>A. swallovia</i> , Geinitz, sp., 1866, pl. xi, figs. 7 a, b .....                              | 229-230 |
| <i>Straparollus</i> , Montfort .....                                                              | 230     |
| <i>S. (Euomphalus) rugosus</i> , Hall, 1858, pl. vi, figs. 5 a, b, and pl. xi, figs. 4 a, b ..... | 230-231 |
| <i>Pleurotomaria</i> , DeFrance .....                                                             | 231     |
| <i>P. haydeniana</i> , Geinitz, 1866, pl. xi, fig. 5 .....                                        | 231     |
| <i>P. perhumerosa</i> , n. s., Meek, 1872, pl. iv, figs. 13 a, b .....                            | 232     |
| <i>P. inornata</i> , n. s., Meek, 1872, pl. iv, fig. 14 .....                                     | 232-233 |
| <i>P. grayvillensis</i> , Norwood & Pratten, 1855, pl. xi, fig. 9 .....                           | 233     |
| <i>P. marcouiana</i> , Geinitz, 1866, pl. xi, fig. 8 .....                                        | 233     |
| <i>P. subdeccusata</i> , Geinitz, 1866, pl. xi, fig. 19 .....                                     | 233     |
| <i>Murchisonia</i> , de Verneuil .....                                                            | 234     |
| <i>M. nebrascensis</i> , Geinitz, 1866, pl. xi, fig. 6 .....                                      | 234     |
| <i>Cephalopoda</i> .                                                                              |         |
| <i>Orthoceras</i> , Auct .....                                                                    | 234     |
| <i>O. cribrorum</i> , Geinitz, 1866, pl. xi, figs. 18 a, b .....                                  | 234     |
| <i>Nautilus</i> , Linn .....                                                                      | 234     |
| <i>N. occidentalis</i> , Swallow, 1858, pl. xi, fig. 17 .....                                     | 234-236 |
| <i>N. ponderosus</i> , White, M. S., 1872, pl. iii, figs. 7 a, b .....                            | 236     |
| <i>Articulata</i> .                                                                               |         |
| <i>Crustacea</i> .                                                                                |         |
| <i>Cythere</i> , Müller .....                                                                     | 237     |
| <i>C. nebrascensis</i> , Geinitz, 1866, pl. xi, figs. 2; and 3 a, b f .....                       | 237     |
| <i>Cythere</i> , sp., pl. xi, figs. 1 a-d .....                                                   | 237     |
| <i>Phillipsia</i> , Portlock .....                                                                | 237     |
| <i>Phillipsia</i> , sp., Geinitz, 1866, pl. iii, figs. 1 a, b .....                               | 237-238 |
| <i>P. scitula</i> , M. & W., 1865, pl. vi, fig. 9 .....                                           | 238     |
| <i>P. major</i> , Shumard, 1858, pl. iii, figs. 2 a-c .....                                       | 238-239 |

MEEK, F. B. [Geological reports on Miller, Morgan, and Saline Counties, Missouri.]  
 <Reports on the Geological Survey of the State of Missouri, 1855-71, by G. C. Broadhead, F. B. Meek, and B. F. Shumard, chapters vii-ix, pp. 111-188. Jefferson City, 1873.

Geological maps of Miller and Morgan Counties accompany these reports.

#### CHAPTER VII.

|                                                    | Page. |
|----------------------------------------------------|-------|
| Miller County .....                                | 112   |
| Streams .....                                      | 112   |
| Springs .....                                      | 114   |
| Timber .....                                       | 115   |
| Geological structure of Miller County .....        | 115   |
| Quaternary system.—Alluvium .....                  | 117   |
| Carboniferous system .....                         | 118   |
| Lower Silurian rocks.—Saccharoidal sandstone ..... | 118   |



|                                                   | Page. |
|---------------------------------------------------|-------|
| Second magnesian limestone.....                   | 118   |
| Second sandstone.....                             | 121   |
| Third magnesian limestone.....                    | 123   |
| Third sandstone.....                              | 127   |
| Fourth magnesian limestone.....                   | 127   |
| Economical geology.....                           | 128   |
| Soil, clays for the manufacture of bricks.....    | 128   |
| Building stones.....                              | 128   |
| Road material, limestone for quicklime, sand..... | 129   |
| Iron ore.....                                     | 130   |
| Lead.....                                         | 131   |
| Coal.....                                         | 132   |
| Sulphate of baryta.....                           | 133   |

CHAPTER VIII.

|                                         |     |
|-----------------------------------------|-----|
| Morgan County.....                      | 135 |
| Springs.....                            | 136 |
| Streams.....                            | 137 |
| Timber.....                             | 138 |
| Geological structure.....               | 138 |
| Quaternary system.—Alluvium.....        | 139 |
| Carboniferous rocks.—Coal measures..... | 140 |
| Encrinital limestone.....               | 140 |
| Chouteau limestone.....                 | 141 |
| Silurian system.....                    | 141 |
| First magnesian limestone.....          | 141 |
| Saccharoidal sandstone.....             | 142 |
| Second magnesian limestone.....         | 143 |
| Second sandstone.....                   | 144 |
| Third magnesian limestone.....          | 145 |
| Third sandstone.....                    | 147 |
| Fourth magnesian limestone.....         | 148 |
| Economical geology.....                 | 149 |
| Soils.....                              | 149 |
| Coal.....                               | 149 |
| Lead.....                               | 152 |
| Iron ore.....                           | 155 |
| Heavy spar.....                         | 156 |
| Building materiel.....                  | 156 |

CHAPTER IX.

|                                                             |     |
|-------------------------------------------------------------|-----|
| Saline County.....                                          | 157 |
| Streams.....                                                | 158 |
| Timber.....                                                 | 159 |
| Geological structure.....                                   | 160 |
| Quaternary deposits.....                                    | 161 |
| Alluvium of the Missouri Flats.....                         | 161 |
| Bluff or Loess Deposit.....                                 | 161 |
| Drift.....                                                  | 162 |
| Carboniferous rocks.—Coal measures.....                     | 163 |
| Ferruginous sandstone.....                                  | 172 |
| Archimedes limestone.....                                   | 172 |
| Encrinital limestone.....                                   | 173 |
| Chouteau limestone.....                                     | 174 |
| Cooper marble.....                                          | 176 |
| Semi-crystalline limestone.....                             | 176 |
| Silurian system.....                                        | 178 |
| Trenton limestone?.....                                     | 178 |
| Saccharoidal sandstone.....                                 | 178 |
| Economical geology.....                                     | 179 |
| Soil.....                                                   | 179 |
| Coal.....                                                   | 180 |
| Building stone.....                                         | 180 |
| Limestones for making lime, sand, clays for bricks, &c..... | 181 |
| Springs.....                                                | 181 |

## 88.

MEEK, F. B. Spargen Hill fossils identified among specimens from Idaho. <Am. Journ. Sci., vol. v, 3d ser., pp. 383, 384. 1873. New Haven, 1873.

The author identifies, among some collections made by Prof. F. H. Bradley, some of the minute species of Mollusca, for which the locality in Washington County, Indiana, known as Spargen Hill, is noted. A list of the species identified is given, but no discussion of them is made.

## 89.

MEEK, F. B. Preliminary Paleontological Report, consisting of lists and descriptions of fossils, with remarks on the ages of the rocks in which they were found, &c., &c. <Sixth Ann. Report of the U. S. Geol. Survey of the Territories, pp. 431-518. 1873. Washington, 1873.

Genera Admetopsis, Velatella.

|                                                                                                                | Page.   |
|----------------------------------------------------------------------------------------------------------------|---------|
| General remarks .....                                                                                          | 431     |
| Silurian age .....                                                                                             | 431-432 |
| Carboniferous age .....                                                                                        | 432-434 |
| Jurassic age .....                                                                                             | 434-435 |
| Cretaceous age .....                                                                                           | 435-438 |
| Section from about 1½ miles northeast of Coalville, in a northwesterly direction, to Echo Cañon, fig. 52 ..... | 439-440 |
| Section of the rocks exposed on Sulphur Creek, near Bear River, Wyoming, fig. 53 .....                         | 451-452 |
| Tertiary age .....                                                                                             | 462     |
| Lists of fossils collected .....                                                                               | 463     |

Descriptions of new species of fossils.

SILURIAN FORMS.

|                                                                                          |         |
|------------------------------------------------------------------------------------------|---------|
| <i>Iphidea</i> (?) <i>sculptilis</i> , n. s., Meek, 1873 .....                           | 479     |
| <i>Asaphus</i> ( <i>Megalaspis</i> ?) <i>goniocercus</i> , n. s., Meek, 1873 .....       | 480     |
| <i>Bathyurus serratus</i> , n. s., Meek, 1873 .....                                      | 480-482 |
| <i>B. ? haydeni</i> , n. s., Meek, 1873 .....                                            | 482-484 |
| <i>Bathyrurellus</i> ( <i>Aspiacus</i> ) <i>bradleyi</i> , n. s., Meek, 1873 .....       | 484-485 |
| <i>Conocoryphe</i> ( <i>Ptychoporia</i> ) <i>gallatinensis</i> , n. s., Meek, 1873 ..... | 485-487 |

CRETACEOUS FORMS.

|                                                                                       |         |
|---------------------------------------------------------------------------------------|---------|
| <i>Ostrea soleniscus</i> , Meek, 1870 .....                                           | 487-488 |
| <i>Ostrea anomioides</i> , n. s., Meek, 1873 .....                                    | 488     |
| <i>Avicula</i> ( <i>Pseudoptera</i> ) <i>propleura</i> , n. s., Meek, 1873 .....      | 489-490 |
| <i>Avicula</i> ( <i>Pseudoptera</i> ) <i>rhynchophora</i> , n. s., Meek, 1873 .....   | 490-491 |
| <i>Avicula</i> ( <i>Orytoma</i> ) <i>gastrodes</i> , n. s., Meek, 1873 .....          | 491-492 |
| <i>Modiola</i> ( <i>Brachydontes</i> ) <i>multilinigera</i> , n. s., Meek, 1873 ..... | 492-493 |
| <i>Trapezium micronema</i> , n. s., Meek, 1873 .....                                  | 493     |
| <i>Corbicula</i> ( <i>Veloritina</i> ) <i>inflexa</i> , n. s., Meek, 1873 .....       | 493-494 |
| <i>Corbicula</i> ( <i>Cyrena</i> ?) <i>securis</i> , n. s., Meek, 1873 .....          | 494-495 |
| <i>Corbicula æquilateralis</i> , n. s., Meek, 1873 .....                              | 495     |
| <i>Cyrena carletoni</i> , n. s., Meek, 1873 .....                                     | 495-496 |
| <i>Pharella ? pealei</i> , n. s., Meek, 1873 .....                                    | 496     |
| <i>Corbula nematophora</i> , n. s., Meek, 1873 .....                                  | 496-497 |
| <i>Neritina</i> ( <i>Dostia</i> ?) <i>bellatula</i> , n. s., Meek, 1873 .....         | 497-498 |
| <i>Neritina</i> ( <i>Dostia</i> ?) <i>patelliformis</i> , n. s., Meek, 1873 .....     | 498-499 |
| <i>Neritina</i> ( <i>Dostia</i> ?) <i>carditoides</i> , n. s., Meek, 1873 .....       | 499     |
| <i>Neritina</i> ( <i>Neritella</i> ) <i>bannisteri</i> , n. s., Meek, 1873 .....      | 499-500 |
| <i>Neritina</i> ( <i>Neritella</i> ) <i>pisum</i> , n. s., Meek, 1873 .....           | 500     |
| <i>Neritina pisiformis</i> , n. s., Meek, 1873 .....                                  | 500-501 |
| <i>Admete ? rhomboides</i> , n. s., Meek, 1873 .....                                  | 501     |
| <i>Admete ? gregaria</i> , n. s., Meek, 1873 .....                                    | 501-502 |
| <i>Admete ? subfusiformis</i> , n. s., Meek, 1873 .....                               | 502     |
| <i>Turritella coalvillensis</i> , n. s., Meek, 1873 .....                             | 502-503 |
| <i>Turritella spironeuma</i> , n. s., Meek, 1873 .....                                | 503-504 |
| <i>Turritella</i> ( <i>Aclis</i> ?) <i>microneuma</i> , n. s., Meek, 1873 .....       | 504     |
| <i>Fusus</i> ( <i>Neptunea</i> ?) <i>gabbi</i> , n. s., Meek, 1873 .....              | 504-505 |
| <i>Fusus</i> ( <i>Neptunea</i> ?) <i>utahensis</i> , n. s., Meek, 1873 .....          | 505     |



|                                                                        | Page.   |
|------------------------------------------------------------------------|---------|
| <i>Turbonilla (Chemnitzia?) coalvillensis</i> , n. s., Meek, 1873..... | 505-506 |
| <i>Eulima funicula</i> , n. s., Meek, 1873.....                        | 506     |
| <i>Eulima chrysalis</i> , n. s., Meek, 1873.....                       | 506     |
| <i>Eulima? inconspicua</i> , n. s., Meek, 1873.....                    | 507     |
| <i>Melampus antiquus</i> , n. s., Meek, 1873.....                      | 507     |
| <i>Valcata nana</i> , n. s., Meek, 1873.....                           | 507     |
| <i>Physa carletoni</i> , n. s., Meek, 1873.....                        | 508     |

*Species from the Bitter Creek series.*

|                                                                       |         |
|-----------------------------------------------------------------------|---------|
| <i>Ostrea wyomingensis</i> , Meek, 1872.....                          | 508-509 |
| <i>Anomia (Placunopsis?) gryphorhynchus</i> , Meek, 1871.....         | 509-511 |
| <i>Corbicula (Veloritina) cytheriformis</i> , M. & H., 1860.....      | 511     |
| <i>Corbicula? fracta</i> , var. <i>crassiuscula</i> , Meek, 1873..... | 512-513 |
| <i>Corbicula (Veloritina) bunnisteri</i> , n. s., Meek, 1873.....     | 513     |
| <i>Corbula undifera</i> , n. s., Meek, 1873.....                      | 513-514 |
| <i>Corbula tropidophora</i> , n. s., Meek, 1873.....                  | 514-515 |
| <i>Goniobasis? insculpta</i> , n. s., Meek, 1873.....                 | 515-516 |
| <i>Melania (Goniobasis?) wyomingensis</i> , n. s., Meek, 1873.....    | 516     |

*Tertiary forms.*

|                                                                  |         |
|------------------------------------------------------------------|---------|
| <i>Physa bridgerensis</i> , n. s., Meek, 1873.....               | 516-517 |
| <i>Limnæa (Limnophysa?) compactilis</i> , n. s., Meek, 1873..... | 517     |
| <i>Pupa? leidyi</i> , n. s., Meek, 1873.....                     | 517-518 |

90.

MEEK, F. B. Descriptions of Invertebrate fossils of the Silurian and Devonian systems. <Geol. Surv. of Ohio, vol. i, part ii. Palæontology, pp. 1-243, plates 1-23, and 3 plates of diagrams of Crinoids. 1873. Columbus, 1873.

FOSSILS OF THE CINCINNATI GROUP.

*Radiata.*

*Echinodermata.*

*Crinoidea.*

|                                                                                            | Page.  |
|--------------------------------------------------------------------------------------------|--------|
| <i>Heterocrinus</i> , Hall, 1847.....                                                      | 1-2    |
| <i>H. constrictus</i> , Hall, 1866, pl. i, figs. 10 a, b (and 11 f).....                   | 3-5    |
| <i>H. exilis</i> , Hall? 1868, pl. i, fig. 12.....                                         | 5-7    |
| <i>H. simplex</i> , Hall, 1847, pl. i, figs. 4 a, b; 5 a, b (with 6 a, b and 7 a-c f)..... | 7-10   |
| <i>H. juvenis</i> , Hall, 1866, pl. i, figs. 3 a-c.....                                    | 10-12  |
| <i>H. heterodactylus</i> , Hall? 1847, pl. i, figs. 1 a, b (and 2 a, b f).....             | 12-14  |
| <i>H. latus</i> , Hall, 1872, pl. i, figs. 8 a, b.....                                     | 14, 15 |
| <i>H. (Iocrinus) suberacusus</i> , M. and W., 1865, pl. i, figs. 9 a, b.....               | 15-17  |
| <i>Anomalocrinus</i> , M. and W., 1868.....                                                | 17     |
| <i>A. incurvus</i> , M. and W., 1865, pl. ii, figs. 6 a-f.....                             | 17-20  |
| <i>Poteriocrinites</i> , Miller, 1821.....                                                 | 20     |
| Subgenus ( <i>Dendrocrinus</i> ) Hall, 1852.....                                           | 20     |
| <i>P. (Dendrocrinus) cincinnatensis</i> , Meek, 1872, pl. iii bis, figs. 5 a, b.....       | 20-22  |
| <i>P. (Dendrocrinus) polydactylus</i> , Shumard, sp. 1867, pl. iii bis, fig. 9.....        | 22     |
| <i>P. (Dendrocrinus) posticus</i> , Hall, 1872, pl. iii bis, figs. 4 a-c.....              | 22-24  |
| <i>P. (Dendrocrinus) dyeri</i> , Meek, 1872, pl. iii bis, figs. 3 a, b.....                | 24-25  |
| <i>P. (Dendrocrinus) caduceus</i> , Hall, 1866, pl. 3 bis, figs. i, a-d.....               | 26-27  |
| <i>P. (Dendrocrinus) casei</i> , Meek, 1871, pl. iii bis, figs. 2 a-c.....                 | 28-30  |
| <i>Glyptocrinus</i> , Hall, 1847.....                                                      | 30     |
| <i>G. decadactylus</i> , Hall, 1847, pl. ii, figs. 5 a, b.....                             | 30-32  |
| <i>G. dyeri</i> , Meek, 1872, pl. ii, figs. a, b.....                                      | 32-34  |
| <i>G. dyeri</i> var. <i>sub-globosus</i> , Meek, 1872, pl. ii, fig. 2, c.....              | 34     |
| <i>G. nealli</i> , Hall, 1866, pl. ii, figs. 3 a-c.....                                    | 34-36  |
| <i>G. parvus</i> , Hall, 1872, pl. ii, figs. 4 a, b.....                                   | 36-37  |
| <i>G. baeri</i> , Meek, 1872, pl. ii, figs. 1 a, b.....                                    | 37-39  |

*Cystoidea.*

|                                                                                   |       |
|-----------------------------------------------------------------------------------|-------|
| <i>Lepacrinites</i> , Conrad, 1840.....                                           | 39    |
| <i>L. moorei</i> , Meek, 1871, pl. iii, figs. 4 a-c.....                          | 39-41 |
| <i>Anomalocystites</i> , Hall, 1859.....                                          | 41    |
| <i>A. (Atelocystites?) balanoides</i> , Meek, 1872, pl. iii bis, figs. 6 a-c..... | 41-44 |
| <i>Lichenocrinus</i> , Hall, 1866.....                                            | 44-51 |
| <i>L. dyeri</i> , Hall, 1866, pl. iii, figs. 2 (and 3 a, b f).....                | 51    |

|                                                                                      | Page    |
|--------------------------------------------------------------------------------------|---------|
| <i>L. crateriformis</i> , Hall, 1866, pl. iii, figs. 1 a-d                           | 51-52   |
| <i>Hemicyclites</i> , Hall                                                           | 52      |
| <i>H. stellatus</i> , Hall, 1866, pl. iii, figs. 8 a, b                              | 53-54   |
| <i>H. (Cystaster) granulatus</i> , Hall, 1872, pl. iii, figs. 9 a, b                 | 54      |
| <i>Agelocrinites</i> , Vannem, 1842                                                  | 55      |
| <i>A. (Lepidodiscus) cincinnatiensis</i> , Reimer, 1851, pl. iii, figs. 6 a, b       | 55-56   |
| <i>A. pileus</i> , Hall, 1866, pl. iii, fig. 5                                       | 56-57   |
| <i>A. vorticellata</i> , Hall, 1866, pl. iii, figs. 7 a, b                           | 57-58   |
| <b>Asteroidea.</b>                                                                   |         |
| <i>Palaeaster</i> , Hall                                                             | 58      |
| <i>P. f. dyeri</i> , Meek, 1872, pl. iv, figs. 2 a-f                                 | 58-60   |
| <i>P. granulatus</i> , Hall† 1866, pl. iv, figs. 3 a-c                               | 60-61   |
| <i>P. f. jamesii</i> , Dana, 1863, pl. iv, fig. 4                                    | 62-64   |
| <i>P. incomptus</i> , Meek, 1872, pl. iv, figs. 5 a, b                               | 64-65   |
| <i>P. shafferi</i> , Hall, 1898, pl. iv, fig. 1                                      | 66      |
| <i>Stenaster</i> Billings, 1858                                                      | 66      |
| <i>S. grandis</i> , Meek, 1872, pl. iii bis, fig. 7 a-c                              | 66-67   |
| <b>Ophiuroidea.</b>                                                                  |         |
| <i>Protaster</i> †, Forbes, 1849                                                     | 68      |
| <i>P. granuliferus</i> , Meek, 1872, pl. iii bis, figs. 8 a, b                       | 68-69   |
| <b>Mollusca.</b>                                                                     |         |
| <b>Polyzoa.</b>                                                                      |         |
| <i>Phylodictya</i> , Lonsdale, 1839                                                  | 69      |
| <i>P. (Stictopora) shafferi</i> , Meek, 1872, pl. v, figs. 1 a-c                     | 69-70   |
| <b>Brachiopoda.</b>                                                                  |         |
| <i>Leptaena</i> , Dalman, 1828                                                       | 70      |
| <i>L. sericea</i> , Sowerby † 1839, pl. v, figs. 3 a-h                               | 70-72   |
| <i>Strophomena</i> , Rafinesque, 1827                                                | 73-75   |
| <i>S. rhomboidalis</i> , Wilckens sp., 1769, pl. v, figs. 6 a-c                      | 75-77   |
| Subgenus <i>Hemipronites</i> , Pander                                                | 77      |
| (Respirate species.)                                                                 |         |
| <i>S. (Hemipronites) nutans</i> , James, 1871, pl. vi, figs. 1 a-f                   | 77-79   |
| <i>S. (Hemipronites) planumbona</i> , Hall, 1847, pl. vi, figs. 3 a-h                | 79-81   |
| <i>S. (Hemipronites) plicata</i> , James, 1871, pl. vi, figs. 4 a-h                  | 81-82   |
| <i>S. (Hemipronites) plano-conveza</i> , Hall, 1847, pl. ii, figs. 2 a-h             | 82-83   |
| <i>S. (Hemipronites) fluitans</i> , Hall, 1847, pl. vi, figs. 5 a-d                  | 83-85   |
| <i>S. (Hemipronites) sulcata</i> , de Verneuil, 1848, pl. v, figs. 4 a-e             | 85-86   |
| <i>S. (Hemipronites) sinuata</i> , James, 1871, pl. v, figs. 5 a-f                   | 87-88   |
| (Non-respirate species.)                                                             |         |
| <i>S. (Hemipronites) alternata</i> (Conr.), Emmons, 1838, pl. vii, figs. 1 a-g       | 88-91   |
| <i>Orthis</i> , Dalman, 1828                                                         | 92      |
| (Respirate species.)                                                                 |         |
| <i>O. retrorsa</i> , Salter † 1858, pl. xi, figs. 7 a-c                              | 92-94   |
| <i>O. subquadrata</i> , Hall, pl. ix, figs. 2 b-g                                    | 94-96   |
| <i>O. occidentalis</i> , Hall, 1847, pl. ix, figs. 3 a-h                             | 96-99   |
| <i>O. inculpta</i> , Hall, 1847, pl. ix, figs. 1 a-h                                 | 99-101  |
| <i>O. borealis</i> , Billings, 1859, pl. viii, figs. 4 a-f                           | 101-103 |
| <i>O. bellula</i> , James, 1871, pl. viii, figs. 5 a-f                               | 103-104 |
| <i>O. (T) ella</i> , Hall, 1861, pl. viii, figs. 9 a-d                               | 105-106 |
| (Non-respirate species.)                                                             |         |
| <i>O. fissicosta</i> , Hall, 1847, pl. viii, figs. 6 a-h                             | 106-107 |
| <i>O. plicatella</i> , Hall, 1847, pl. viii, figs. 7 a-h                             | 108-109 |
| <i>O. emacerata</i> , Hall, 1860, pl. viii, figs. 1 a-d, and figs. 2 a-g             | 109-111 |
| <i>O. emacerata</i> var. <i>multisepta</i> , James, 1871, pl. viii, figs. 3 a-d      | 112     |
| <i>O. (Platystrophia) biforata</i> , Schlotheim, sp., 1820, pl. x                    | 112-114 |
| Var. 1. <i>O. (Platystrophia) lynx</i> , Von Buch., pl. x, figs. 1 a-e               | 114-116 |
| Var. 2. <i>O. (Platystrophia) laticosta</i> , James, 1871, pl. x, figs. 4 a-f        | 116-117 |
| Var. 3. <i>O. (Platystrophia) dentata</i> , Pander † James, 1871, pl. x, figs. 3 a-d | 117-119 |
| Var. 4. <i>O. (Platystrophia) acutilirata</i> , Conr., sp., 1842, pl. x, figs. 5 a-g | 119-121 |
| <i>Rhynchonella</i> , Fischer de Waldh., 1809                                        | 121     |
| <i>R. dentata</i> , Hall, 1847, pl. xi, figs. 3 a-d                                  | 121-122 |
| <i>R. capax</i> , Conrad, sp., 1842, pl. xi, figs. 6 a-f                             | 123-124 |
| <i>Zygospira</i> , Hall, 1862                                                        | 125     |
| <i>Z. modesta</i> , Say, sp., pl. xi, figs. 4 a-d                                    | 125-126 |
| <i>Z. cincinnatiensis</i> , James, 1871, pl. xi, figs. 5 a-c                         | 126     |



|                                                                                      | Page.   |
|--------------------------------------------------------------------------------------|---------|
| <i>Z. headi</i> , Billings, sp., 1862, pl. xi, figs. 1 a-d.....                      | 127-128 |
| <i>Retzia</i> , King, 1850.....                                                      | 128     |
| <i>R. (Trematospira) granulifera</i> , Meek, 1872, pl. xi, figs. 6 a-e.....          | 128-129 |
| <i>Pholidops</i> , Hall, 1860.....                                                   | 130     |
| <i>P. cincinnatiensis</i> , Hall, 1872, pl. v, figs. 2 a, b.....                     | 130     |
| <i>Lamellibranchiata.</i>                                                            |         |
| <i>Ambonychia</i> , Hall, 1847.....                                                  | 130     |
| <i>A. costata</i> , James, 1871, pl. xii, figs. 5 a-c.....                           | 130-131 |
| <i>A. (Megaptera) alata</i> , Meek, 1872, pl. xi, fig. 9, and pl. xii, fig. 10.....  | 131-132 |
| <i>A. (Megaptera) casei</i> , M. & W., 1866, pl. xi, fig. 8.....                     | 133     |
| <i>Cypriocardites</i> , Conrad, 1841.....                                            | 133     |
| <i>C. sterlingensis</i> , M. & W., 1866, pl. xi, figs. 12 a, b.....                  | 133-135 |
| <i>C. ? carinata</i> , Meek, 1872, pl. xii, figs. 6 a, b.....                        | 135-136 |
| <i>Megambonia</i> , Hall, 1859.....                                                  | 136     |
| <i>M. jamesi</i> , Meek, 1871, pl. xii, figs. 9 a, b.....                            | 136-138 |
| <i>Clidophorus</i> , Hall, 1847.....                                                 | 138     |
| <i>C. (Nuculites ?) fabula</i> , Hall, sp., 1845, pl. xi, figs. 10 a, b.....         | 138-139 |
| <i>Tellinomya</i> , Hall, 1847.....                                                  | 139     |
| <i>T. ? obliqua</i> , Hall, sp., 1845, pl. xi, figs. 11 a-c.....                     | 139     |
| <i>Anodontopsis</i> , McCoy, 1851.....                                               | 140     |
| <i>A. ? milleri</i> , Meek, 1871, pl. xii, figs. 1 a-d.....                          | 140-141 |
| <i>A. (Modiolopsis ?) unionoides</i> , Meek, 1871, pl. xii, figs. 2 a, b.....        | 141-142 |
| <i>Sedgewickia</i> , McCoy, 1844.....                                                | 142     |
| <i>S. ( ? Grammysia) neglecta</i> , Meek, 1872, pl. xii, fig. 8.....                 | 142-143 |
| <i>S. ? fragilis</i> , Meek, 1872, pl. xii, figs. 3 a, b.....                        | 143-144 |
| <i>S. ? compressa</i> , Meek, 1872, pl. xii, figs. 7 a, b.....                       | 144-145 |
| <i>Cardiomorpha</i> , de Koninck, 1844.....                                          | 146     |
| <i>C. ? obliquata</i> , Meek, 1872, pl. xii, figs. 4 a, b.....                       | 146-147 |
| <i>Gastropoda.</i>                                                                   |         |
| <i>Cyrtolites</i> , Conrad, 1838.....                                                | 147     |
| <i>C. (Microceras) inornatus</i> , Hall, sp., 1845, pl. xiii, figs. 4 a, b.....      | 147-148 |
| <i>C. ornatus</i> , Conrad, 1838, pl. xiii, figs. 3 a, b.....                        | 148-149 |
| <i>C. dyeri</i> , Hall, 1871, pl. xiii, figs. 2 a-e.....                             | 149-150 |
| <i>C. ? costatus</i> , James, 1872, pl. xiii, figs. 1 a-c.....                       | 150     |
| <i>Cyclonema</i> , Hall, 1852.....                                                   | 151     |
| <i>C. bilix</i> , Conrad sp., 1842, pl. xiii, figs. 5 a, c, d, g, and 5 e, f, i..... | 151-152 |
| <i>Cyclora</i> , Hall, 1845.....                                                     | 152     |
| <i>C. minuta</i> , Hall, 1845, pl. xiii, figs. 7 a-e.....                            | 152-153 |
| <i>C. ? parvula</i> , Hall, sp., 1845.....                                           | 154     |
| <i>Pleurotomaria</i> , DeFrance, 1826.....                                           | 154     |
| <i>P. (Scalites ?) tropidophora</i> , Meek, 1872, pl. xiii, figs. 6 a-c.....         | 154-155 |
| <i>Cephalopoda.</i>                                                                  |         |
| <i>Orthoceras</i> , Auct.....                                                        |         |
| <i>O. ortonii</i> , Meek, 1872, pl. xiii, fig. 8.....                                | 155-156 |
| <i>Trochoceras</i> , Barrande, 1847.....                                             | 157     |
| <i>T. ? baeri</i> , M. & W., 1865, pl. xiii, fig. 9.....                             | 157-158 |
| <i>Articulata.</i>                                                                   |         |
| <i>Crustacea.</i>                                                                    |         |
| <i>Entomostraca.</i>                                                                 |         |
| <i>Cythere</i> , Muller, 1785.....                                                   | 158     |
| <i>C. cincinnatiensis</i> , Meek, 1872, pl. xiv, figs. 1 a-d.....                    | 158-159 |
| <i>Asaphus</i> , Brongniart, 1822.....                                               | 159     |
| <i>A. (Isotelus) megistos</i> , Locke ? 1842, pl. xiv, fig. 13.....                  | 159-160 |
| <i>Proetus</i> , Steininger, 1831.....                                               |         |
| <i>P. spurlocki</i> , Meek, 1872, pl. xiv, fig. 12.....                              | 161-162 |
| <i>Ceraurus</i> , Green, 1833.....                                                   | 622     |
| <i>C. icarus</i> , Billings, 1859, pl. xiv, figs. 11 a-c.....                        | 162-165 |
| <i>Acidaspis</i> , Murchison, 1839.....                                              | 165     |
| <i>A. croceus</i> , Locke, ? 1842, pl. xiv, figs. 10 a, b.....                       | 165-167 |
| <i>A. cincinnatiensis</i> , Meek, n. sp., 1873, pl. xiv, fig. 3.....                 | 167-169 |
| <i>A. ceralepta</i> , Anthony, sp. ? 1838, pl. xiv, figs. 8, 9.....                  | 169-170 |
| <i>Dalmanites</i> , Barrande, 1852.....                                              | 170     |
| <i>D. carleyi</i> , Meek, 1872, pl. xiv, figs. 2 a-d.....                            | 170-173 |
| <i>Calymene</i> , Brongniart, 1822.....                                              | 173     |
| <i>C. senaria</i> , Conrad, 1841, pl. xiv, figs. 14 a-f.....                         | 173-175 |

## FOSSILS OF THE NIAGARA AND CLETON GROUPS.

## Mollusca.

## Brachiopoda.

- Triplexia*, Hall, 1859 .....  
*T. ortonii*, Meek, 1872, pl. xv, figs. 1 a-e .....  
*Rhynchonella*, Fischer, 1809 .....  
*R. neglecta*, Hall, 1852, pl. xv, figs. 3 a-d .....  
*Meristella*, Hall, 1860 .....  
*M. ? (Meristina) cylindrica*, Hall, sp., 1852, pl. xv, figs. 2 a-d .....  
*Trimerella*, Billings, 1862 .....  
*T. grandis*, Billings, 1862, pl. xvi, figs. 2 a, b .....  
*T. ohioensis*, Meek, 1871, pl. xvi, figs. 1 a-c, and figs. a, b, p. 183 .....

## Gasteropoda.

- Platystoma*, Conrad, 1842 .....  
*P. niagarensis* var. *trigonostoma*, pl. xvi, figs. 3 a-c, and fig. p. 186 .....

## Cephalopoda.

- Lituites*, Montfort, 1808 .....  
*L. ? ortonii*, Meek, n. s., 1873, pl. xv, fig. 4 .....

## Articulata.

## Crustacea.

- Leperditia*, Rouault, 1851 .....  
*L. alta*, Conrad, sp., 1843, pl. xvii, figs. 2 a, b .....  
*Iliaenus*, Dalman, 1826 .....  
*I. (Bumastus) insignis*, Hall, ? 1864, pl. xv, figs. 5 a-c, and figs. a and b, p. 189 .....

## FOSSILS OF THE CORNIFEROUS GROUP.

## Mollusca.

## Polyzoa.

- Ptilodictya*, Lonsdale, 1830 .....  
*P. (Stictopora) gilberti*, Meek, 1871, pl. xviii, figs. 1 a-c .....

## Brachiopoda.

- Rhynchonella*, Fischer, 1809 .....  
*R. carolina*, Hall, 1867, pl. xviii, figs. 8 a-e .....

## Lamellibranchiata.

- Aviculopecten*, McCoy, 1851 .....  
*A. parilis*, Conrad, ? 1842, pl. xviii, figs. 6 a, b .....  
*Lucina*, Bruguiere, 1792 .....  
*L. (Paracyclas) ohioensis*, Meek, 1871, pl. xviii, fig. 7 a, b .....  
*L. lirata*, Conrad, sp., fig. —, p. 200 .....  
*Conocardium*, Brown, 1835, ? .....  
*C. trigonale*, Hall, 1843, figs. A-C, p. 201, and figs. A, B, p. 204 .....  
*C. ohioense*, Meek, 1871, pl. xviii, fig. 9, and figs. A and B, p. 204 .....  
*Solemya*, Lamarck, 1818 .....  
*S. (Janeia) vetusta*, Meek, 1871, pl. xviii, fig. 4 .....  
*Olinopistha*, M. and W., 1870 .....  
*C. antiqua*, Meek, 1871, pl. xviii, figs. 5 a, b .....  
*Sanguinolites*, McCoy, 1844 .....  
*S. ? sanduskyensis*, Meek, 1871, pl. xviii, fig. 3 .....

## Gasteropoda.

- Platyceras*, Conrad, 1842 .....  
*P. multispinosum*, Meek, 1871, pl. xx, figs. 7 a, b .....  
*P. dumosum* var. *attenuatum*, Meek, 1871, pl. xx, figs. 2 a, b .....  
*Cyclonema*, Hall, 1852 .....  
*C. crenulata*, Meek, 1871, pl. xix, figs. 2 a-d .....  
*Naticopsis*, McCoy, 1844 .....  
*N. ? (Isoneima) humilis*, Meek, 1871, pl. xix, figs. 1 a-c, and fig. p. 215 .....  
*N. levis*, Meek, 1871, pl. xix, figs. 4 a, b .....  
*N. acquistriata*, Meek, n. s., 1873, figs. a, b, p. 216 .....  
*Orthonema*, M. and W., 1861 .....  
*O. newberryi*, Meek, 1871, pl. xx, figs. 3 a, b .....  
*Trochonema*, Salter, 1859 .....  
*T. tricarinata*, Meek, 1871, pl. xix, figs. 5 a, b .....  
*Euomphalus*, Sowerby, 1814 .....  
*E. decensis*, Billings, 1861, pl. xix, figs. 3 a, b, and pl. xx, fig. 1 .....  
*Xenophora*, Fischer, 1806 .....  
*X. ? (Pseudophorus) antiqua*, Meek, 1871, pl. xvii, figs. 1 a-c .....



|                                                                            | Page.   |
|----------------------------------------------------------------------------|---------|
| <i>Bellerophon</i> , Montfort, 1808 .....                                  | 222     |
| <i>B. neuberryi</i> , Meek, 1871, pl. xx, fig. 5, and fig. —, p. 223 ..... | 222-225 |
| <i>B. patulus</i> , Hall, fig. —, p. 223 .....                             | 223     |
| <i>B. propinquus</i> , Meek, 1871, pl. xx, figs. 4 a-b .....               | 226     |
| <i>Pleurotomaria</i> , DeFrance, 1826 .....                                | 226     |
| <i>P. lucina</i> , Hall, 1862, pl. xx, fig. 6 .....                        | 226-227 |
| <i>Conularia</i> , Miller, 1818, MS. ....                                  | 228     |
| <i>O. elegantula</i> , Meek, 1871, pl. xxiii, fig. 4 .....                 | 228-229 |
| <i>Cephalopoda</i> .                                                       |         |
| <i>Cyrtoceras</i> , Goldfuss, 1830? .....                                  | 229     |
| <i>C. ohioensis</i> , Meek, 1871, pl. xxiii, figs. 2 and 2 b. ....         | 229-230 |
| <i>Ocyroceratites</i> , Meyer, 1831 .....                                  | 230     |
| <i>G. (?) Trochoceras</i> <i>ohioensis</i> , Meek, 1871, pl. xxii .....    | 230-231 |
| <i>G. (?) Nautilus</i> <i>inelegans</i> , Meek, pl. xxi .....              | 232     |
| <i>Articulata</i> .                                                        |         |
| <i>Crustacea</i> .                                                         |         |
| <i>Proetus</i> , Steininger, 1831 .....                                    | 233     |
| <i>P. planimarginatus</i> , Meek, 1871, pl. xxiii, figs. 3 a, b. ....      | 233-234 |
| <i>Dalmanites</i> , Barrande, 1852 .....                                   | 234     |
| <i>D. ohioensis</i> , Meek, 1871, pl. xxiii, fig. 1 .....                  | 234-236 |

91.

MEEK, F. B., and WORTHEN, A. H. Paleontology. Descriptions of Invertebrates from the Carboniferous System. <Geological Survey of Illinois, vol. v, pp. 323-619, pls. i-xxxii. 1873. Springfield, 1873.

Published by authority of the legislature of Illinois, 1873.  
Genera *Physetocrinus*, *Nipterocrinus*, *Codonites*.

LOWER CARBONIFEROUS SPECIES.

FOSSILS OF THE BURLINGTON GROUP.

|                                                                                               | Page.   |
|-----------------------------------------------------------------------------------------------|---------|
| <i>Echinodermata</i> .....                                                                    | 323     |
| Notes on the structure and habits of the Palaeozoic Crinoidea .....                           | 323     |
| <i>Synbathocrinus</i> , Phillips .....                                                        | 324     |
| <i>Goniasteroidocrinus</i> , Lyon & Casseday .....                                            | 324-325 |
| <i>Cyathocrinus</i> , Miller .....                                                            | 325-327 |
| Convolute support of the digestive sack in the <i>Actinocrinidae</i> .....                    | 327-329 |
| Ambulacral canals passing under the vault in the <i>Actinocrinidae</i> .....                  | 329-339 |
| <i>Actinocrinites</i> , Miller .....                                                          | 339-341 |
| <i>Actinocrinites</i> . Section (a) .....                                                     | 342     |
| <i>A. penicillus</i> , M. & W., 1869, pl. viii, fig. 2 .....                                  | 342-343 |
| <i>A. sculptus</i> , Hall, 1858, pl. iv, fig. 2 .....                                         | 343     |
| <i>A. delicatus</i> , M. & W., 1869, pl. viii, fig. 2 .....                                   | 343-345 |
| <i>Actinocrinites</i> . Section (b) .....                                                     | 345     |
| <i>A. longus</i> , M. & W., 1869, pl. viii, fig. 1 .....                                      | 345-347 |
| <i>Strotocrinus</i> , M. & W., 1866 .....                                                     | 347-349 |
| <i>S. ? asperimus</i> , M. & W., 1869, pl. viii, fig. 3 .....                                 | 349-351 |
| Subgenus <i>Physetocrinus</i> , M. & W. ....                                                  | 351     |
| <i>S. (Physetocrinus ?) asper</i> , M. & W., 1869, pl. vii, fig. 1. Section (b), p. 253 ..... | 351-353 |
| <i>S. ectypus</i> , M. & W., 1869, pl. vii, fig. 5 .....                                      | 353-355 |
| <i>S. liratus</i> , Hall, sp., 1869, pl. vii, fig. 2 .....                                    | 355-357 |
| <i>S. perumbrosus</i> , Hall, sp., 1869, pl. viii, fig. 4 .....                               | 357-360 |
| <i>S. umbrosus</i> , Hall, sp., 1858, pl. viii, fig. 5 .....                                  | 360-362 |
| <i>S. (Physetocrinus) dilatatus</i> , M. & W., 1869, pl. x, fig. 6 .....                      | 363-364 |
| <i>Batocrinus</i> , Casseday .....                                                            | 364-368 |
| <i>B. quasillus</i> , M. & W., 1869, pl. v, fig. 2 .....                                      | 369-370 |
| <i>B. (Eretmocrinus) remibrachiatus</i> , Hall's sp., 1861, pl. x, fig. 5 .....               | 370     |
| <i>B. cassedayanus</i> , M. & W., 1868, pl. v, fig. 1 .....                                   | 370-372 |
| <i>B. trochiscus</i> , M. & W., 1868, pl. v, fig. 6 .....                                     | 372-374 |
| <i>B. pyriformis</i> , Shumard sp., 1855, pl. v, fig. 5 .....                                 | 375-377 |
| <i>B. (Eretmocrinus ?) neglectus</i> , M. & W., 1868, pl. v, fig. 3 .....                     | 377-379 |
| <i>B. christyi</i> , Shumard's sp., pl. v, fig. 4 .....                                       | 379     |

|                                                                                    | Page.   |
|------------------------------------------------------------------------------------|---------|
| <i>B. verneuilianus</i> , Shum. sp., 1855, pl. iv, figs. 3 and 4.....              | 379     |
| <i>Dorycrinus</i> , Roemer.....                                                    | 379-380 |
| <i>D. canaliculatus</i> , M. & W., 1869, pl. vi, fig. 4.....                       | 381-382 |
| <i>D. unicornis</i> , O. & S., sp., 1850, pl. vi, fig. 2.....                      | 383     |
| <i>D. raumeri</i> , M. & W., 1868, pl. 10, fig. 3.....                             | 383-385 |
| <i>D. quinquelobus</i> var. <i>intermedius</i> , M. & W., 1868, pl. x, fig. 4..... | 385-388 |
| <i>Amphoracrinus</i> , Austin.....                                                 | 388-389 |
| <i>A. divergens</i> , Hall, sp., 1860, pl. vi, fig. 6.....                         | 389-390 |
| <i>A. ? spinobrachiatus</i> , Hall, sp., 1860, pl. vi, fig. 5.....                 | 389     |
| <i>Gilbertocrinus</i> , Phillips.....                                              | 389     |
| Subgenus <i>Goniasteroidocrinus</i> , Lyon & Casseday, 1859.....                   | 389     |
| <i>G. (Goniasteroidocrinus) tenuiradiatus</i> , M. & W., 1869, pl. xi, fig. 1..... | 389-390 |
| <i>G. (Goniasteroidocrinus) obovatus</i> , M. & W., 1868, pl. iv, fig. 6.....      | 391-392 |
| <i>Megistocrinus</i> , O. & S., 1850.....                                          | 393-396 |
| <i>M. parvirostris</i> , M. & W., 1869, pl. vi, fig. 7.....                        | 396-397 |
| <i>M. (Saccocrinus) whitei</i> , Hall, 1861, pl. vi, fig. 1.....                   | 397     |
| <i>Agaricocrinus</i> , Troost.....                                                 | 397     |
| <i>A. nodosus</i> , M. & W., 1869, pl. x, fig. 7.....                              | 397-399 |
| <i>Tazocrinus</i> , Phillips, 1843.....                                            | 399     |
| <i>T. thiemei</i> , Hall, sp., 1861, pl. iv, fig. 1.....                           | 399     |
| <i>Cyathocrinites</i> , Miller, 1821.....                                          | 400-401 |
| <i>C. sculptilis</i> , Hall, pl. iv, fig. 5.....                                   | 401     |
| <i>C. fragilis</i> , M. & W., 1868, pl. ii, fig. 14.....                           | 401-403 |
| <i>C. tenuidactylus</i> , M. & W., 1868, pl. ii, fig. 15.....                      | 403-405 |
| <i>Poteriocrinites</i> , Miller.....                                               | 405     |
| <i>P. ? perplexus</i> , M. & W., 1869, pl. ii, fig. 12.....                        | 405-406 |
| <i>Scaphiocrinus</i> , Hall.....                                                   | 407     |
| <i>S. delicatus</i> , M. & W., 1869, pl. i, fig. 5.....                            | 407-408 |
| <i>S. elio</i> , M. & W., 1869, pl. i, fig. 10.....                                | 408-409 |
| <i>S. notabilis</i> , M. & W., 1869, pl. i, fig. 9.....                            | 410-412 |
| <i>S. rudis</i> , M. & W., 1869, pl. i, fig. 1.....                                | 412-413 |
| <i>S. penicillus</i> , M. & W., 1869, pl. ii, fig. 7.....                          | 414-415 |
| <i>S. macrodactylus</i> , M. & W., 1869, pl. ii, fig. 9.....                       | 415-416 |
| <i>S. juvenis</i> , M. & W., 1869, pl. ii, fig. 8.....                             | 417-418 |
| <i>S. striatus</i> , M. & W., 1869, pl. ii, fig. 11.....                           | 418-419 |
| <i>S. tethys</i> , M. & W., 1869, pl. ii, fig. 13.....                             | 419-421 |
| <i>S. scalaris</i> , M. & W., 1869, pl. ii, fig. 10.....                           | 421-423 |
| <i>S. nanus</i> , M. & W., 1869, pl. i, fig. 8.....                                | 423-424 |
| <i>S. fascellus</i> , M. & W., 1869, pl. i, fig. 3.....                            | 424-426 |
| Subgenus <i>Zeacrinus</i> .....                                                    | 426     |
| <i>S. (Zeacrinus) scobina</i> , M. & W., 1869, pl. i, fig. 2.....                  | 426-428 |
| <i>S. (Zeacrinus) serratus</i> , M. & W., 1869, pl. i, fig. 6.....                 | 428-430 |
| <i>S. (Zeacrinus) asper</i> , M. & W., 1869, pl. i, fig. 7.....                    | 430-432 |
| <i>S. (Zeacrinus) lyra</i> , M. & W., 1869, pl. i, fig. 11.....                    | 432-433 |
| <i>Nipterocrinus</i> , Wachsmuth.....                                              | 434-435 |
| <i>N. wachsmuthi</i> , M. & W., 1868, pl. ii, fig. 4.....                          | 435-436 |
| <i>N. arboreus</i> , Worthen MSS., pl. iv, fig. 8.....                             | 436-437 |
| <i>Synbathocrinus</i> , Phillips, 1836.....                                        | 437     |
| <i>S. wachsmuthi</i> , M. & W., 1869, pl. ii, fig. 5.....                          | 437-439 |
| <i>S. brevis</i> , M. & W., 1869, pl. ii, fig. 6.....                              | 439     |
| <i>Dichocrinus</i> , Munster, 1839.....                                            | 440     |
| <i>D. lineatus</i> , M. & W., 1869, pl. iii, fig. 1.....                           | 440-441 |
| <i>D. pisum</i> , M. & W., 1869, pl. iii, fig. 2.....                              | 441-442 |
| <i>Calceocrinus</i> , Hall, 1852.....                                              | 442-443 |
| <i>C. ? wachsmuthi</i> , M. & W., 1869, pl. ii, fig. 1.....                        | 444-445 |
| <i>Erisocrinus</i> , M. & W., 1865.....                                            | 445-447 |
| <i>E. antiquus</i> , M. & W., 1869, pl. ii, fig. 3.....                            | 447-448 |
| <i>E. whitei</i> , M. & W., 1869, pl. ii, fig. 2.....                              | 448-449 |
| <i>Platycrinites</i> , Miller.....                                                 | 450     |
| <i>P. tenuibrachiatus</i> , M. & W., 1869, pl. iii, fig. 4.....                    | 450-452 |
| <i>P. planus</i> , O. & S., 1852, pl. iii, fig. 5.....                             | 452     |
| <i>P. subepinoeus</i> , Hall, 1858, pl. ii, fig. 2.....                            | 452     |
| <i>P. burringtonensis</i> , O. & S., 1850, pl. iii, fig. 6.....                    | 452-454 |
| <i>P. halli</i> , Shumard ? 1866, pl. iii, fig. 3.....                             | 454-456 |
| <i>P. equalis</i> , Hall, 1861, pl. iii, fig. 8.....                               | 456-458 |



|                                                                          | Page.   |
|--------------------------------------------------------------------------|---------|
| <i>P. incomptus</i> , White, 1863, pl. iii, fig. 7 .....                 | 450-461 |
| <i>Pentremites</i> , Say .....                                           | 461     |
| <i>P. burlingtonensis</i> , M. & W., 1869, pl. viii, fig. 7 .....        | 461-462 |
| <i>Codonites</i> , M. & W., 1869 .....                                   | 463-464 |
| <i>C. stelliformis</i> , O. & S., sp., 1850, pl. ix, fig. 5, 5a, b ..... | 464-466 |
| <i>C. gracilis</i> , n. s., M. & W., 1873, pl. viii, fig. 6 .....        | 466-468 |
| <i>Granatocrinus</i> , Troost .....                                      | 468     |
| <i>G. melonoides</i> , M. & W., 1869, pl. ix, fig. 1 .....               | 468-470 |
| <i>G. pisum</i> , M. & W., 1869, pl. ix, fig. 4 .....                    | 470-471 |
| <i>G. neglectus</i> , M. & W., 1869, pl. ix, fig. 3 .....                | 471-473 |
| <i>G. norwoodi</i> , O. & S., sp., 1850, pl. ix, fig. 2 .....            | 473     |
| <i>Palæochinus</i> , McCoy .....                                         | 473     |
| <i>P. gracilis</i> , M. & W., 1869, pl. x, fig. 2 .....                  | 473-474 |
| <i>Onychaster</i> , M. & W. ....                                         | 474-475 |
| <i>O. barrisi</i> , Hall, sp., 1861, pl. x, fig. 1 .....                 | 476     |
| <i>Oligoporus</i> , Meek & Worthen .....                                 | 476     |
| <i>O. nobilis</i> , M. & W., 1868, pl. xi, fig. 3 .....                  | 476-478 |
| <i>Eccidaris</i> .....                                                   | 478     |
| <i>E. † squamosus</i> , M. & W., 1860, pl. ix, fig. 15 .....             | 478-482 |

FOSSILS OF THE KEOKUK GROUP.

|                                                                                        |         |
|----------------------------------------------------------------------------------------|---------|
| <i>Barycrinus</i> , Wachs .....                                                        | 483     |
| <i>B. magnificus</i> , M. & W., 1868, pl. xii, fig. 2 .....                            | 483-485 |
| <i>B. geometricus</i> , M. & W., pl. xii, fig. 3 .....                                 | 485     |
| <i>B. hoveyi</i> , var. <i>hirculeus</i> , M. & W., 1868, pl. xiii, fig. 2 .....       | 485-486 |
| <i>B. hoveyi</i> , Hall, sp., 1861, pl. xiii, fig. 1 .....                             | 486     |
| <i>B. mammatus</i> , Worthen MSS., pl. xv, fig. 4 .....                                | 486     |
| <i>B. pentagonus</i> , Worthen MSS., pl. xv, fig. 3 .....                              | 487     |
| <i>B. subtumidus</i> , M. & W., pl. xiii, fig. 3 .....                                 | 487-488 |
| <i>Cyathocrinites? poterium</i> , M. & W., 1870, pl. xii, fig. 4 .....                 | 489-490 |
| <i>Poteriocrinites</i> .....                                                           | 490     |
| <i>P. (Zeacrinus?) concinnus</i> , M. & W., 1870, pl. xiv, fig. 3 .....                | 490-492 |
| Subgenus <i>Scaphiocrinus</i> .....                                                    | 492     |
| <i>P. (Scaphiocrinus) depressus</i> , M. & W., 1870, pl. xiv, fig. 8 .....             | 492-493 |
| <i>P. (Scaphiocrinus) unicus</i> , Hall, 1861, pl. xv, fig. 5 .....                    | 493     |
| <i>P. (Scaphiocrinus) aequalis</i> , Hall, 1861, pl. xv, fig. 6 .....                  | 494     |
| <i>P. (Scaphiocrinus) coreyi</i> , M. & W., 1869, pl. xv, fig. 1 .....                 | 494-495 |
| <i>P. (Scaphiocrinus) madamsi</i> , Worthen MSS., pl. xv, fig. 2 .....                 | 495-496 |
| <i>Forbesiocrinus wortheni</i> , Hall, 1858, pl. xiv, fig. 2, and pl. xv, fig. 7 ..... | 496-498 |
| <i>Onychocrinus exculptus</i> , L. & C., 1859, pl. xiv, fig. 4 .....                   | 498     |
| <i>Agaricocrinus</i> , Troost .....                                                    | 499     |
| <i>A. whitfieldi</i> , Hall, 1868, pl. xii, figs. 1 a, b, and pl. xv, fig. 8 .....     | 499-500 |
| <i>Dichocrinus</i> , Munster .....                                                     | 500     |
| <i>D. expansus</i> , M. & W., 1868, pl. xiv, fig. 1 .....                              | 500-502 |
| <i>D. ficus</i> , C. & L., 1860, pl. xiv, fig. 5 .....                                 | 502     |
| <i>Calceocrinus</i> , Hall .....                                                       | 502     |
| <i>C. bradleyi</i> , M. & W., 1869, pl. xiv, fig. 9 .....                              | 502-504 |
| <i>Catillocrinus</i> , Troost .....                                                    | 504     |
| <i>C. bradleyi</i> , M. & W., 1868, pl. xiv, fig. 10 .....                             | 504-505 |
| <i>Platyerciniles</i> .....                                                            | 506     |
| <i>P. hemisphericus</i> , M. & W., 1865, pl. xvi, figs. 6 a-c .....                    | 506     |
| <i>Pentremites</i> .....                                                               | 506     |
| <i>P. wortheni</i> , Hall? 1858, pl. xiv, fig. 11 .....                                | 506     |
| <i>P. (Troostocrinus?) woodmani</i> , M. & W., 1868, pl. xvi, fig. 4 .....             | 506-508 |
| <i>Granatocrinus</i> .....                                                             | 508     |
| <i>G. granulatus</i> , M. & W., 1865, pl. xv, fig. 10 .....                            | 508-509 |
| <i>Protaster</i> , Forbes .....                                                        | 509     |
| <i>P. ? gregarius</i> , M. & W., 1869, pl. xvi, fig. 5 .....                           | 509-510 |
| <i>Onychaster</i> , M. & W. ....                                                       | 510     |
| <i>O. flexilis</i> , M. & W., pl. xvi, fig. 3 .....                                    | 510     |
| <i>Pholidocidaris</i> , M. & W., 1869 .....                                            | 510-511 |
| <i>P. irregularis</i> , M. & W., 1869, pl. xv, fig. 9 .....                            | 512-513 |
| <i>Agelacrinites</i> , Vanuxem .....                                                   | 513     |
| <i>A. (Lepidodiscus) squamosus</i> , M. & W., 1868, pl. xvi, fig. 1 .....              | 513-515 |

|                                                                                    | Page.   |
|------------------------------------------------------------------------------------|---------|
| <i>Mollusca.</i>                                                                   |         |
| <i>Gasteropoda.</i>                                                                |         |
| <i>Platyceras</i> , Conrad.....                                                    | 516     |
| <i>P. unicum</i> , M. & W., 1866, pl. xvii, fig. 1.....                            | 516-517 |
| <i>P. infundibulum</i> , M. & W., 1866, pl. xvii, fig. 3.....                      | 517-518 |
| <i>P. equilatera</i> , Hall, 1860, pl. xvii, fig. 2.....                           | 518-519 |
| <i>P. fissurella</i> , Hall, 1859, pl. xvii, fig. 4.....                           | 519-520 |
| <i>Pteropoda.</i>                                                                  |         |
| <i>Conularia.</i>                                                                  |         |
| <i>Conularia subcarbonaria</i> , M. & W., 1865, pl. xix, fig. 4.....               | 520-522 |
| <i>Cephalopoda.</i>                                                                |         |
| <i>Nautilus</i> , Linn.....                                                        | 522     |
| <i>N. (Discites) disciformis</i> , M. & W., 1865, pl. xviii, fig. 1.....           | 522-523 |
| <i>N. (Temnocheilus) niotensis</i> , M. & W., 1865, pl. xix, fig. 3.....           | 523-524 |
| <i>N. (Solenocleilus) leidyi</i> , M. & W., 1865, pl. xviii, fig. 2.....           | 524-525 |
| <i>Articulata.</i>                                                                 |         |
| <i>Phillipsia</i> , Portlock.....                                                  | 525     |
| <i>P. (Griffithides) portlockii</i> , M. & W., 1865, pl. xix, fig. 6.....          | 525-528 |
| <i>P. (Griffithides) bufo</i> , M. & W., 1870, pl. xv, fig. 10.....                | 528-529 |
| FOSSILS OF THE SAINT LOUIS GROUP.                                                  |         |
| <i>Echinodermata.</i>                                                              |         |
| <i>Barycerinus</i> .....                                                           | 530     |
| <i>B. spectabilis</i> , M. & W., 1869, pl. xx, fig. 8.....                         | 530-533 |
| <i>Poteriocrinites</i> .....                                                       | 533     |
| <i>P. hardinensis</i> , Worthen MSS., pl. xx, fig. 10.....                         | 533     |
| Subgenus <i>Scaphiocerinus</i> .....                                               | 534     |
| <i>P. (Scaphiocerinus) huntvillei</i> , Worthen MSS., pl. xx, fig. 1.....          | 534     |
| Subgenus <i>Zeacrinus</i> .....                                                    | 534     |
| <i>P. (Zeacrinus) arboreus</i> , Worthen MSS., pl. xx, fig. 5.....                 | 534-535 |
| <i>P. (Zeacrinus) cariniferous</i> , Worthen MSS., pl. xx, fig. 4.....             | 535-536 |
| <i>P. (Zeacrinus) compactilis</i> , Worthen MSS., pl. xxi, fig. 5.....             | 536-537 |
| <i>Dichocerinus</i> , Munster.....                                                 | 537     |
| <i>D. cornigerus</i> , Shumard ? 1860, pl. xx, fig. 6.....                         | 537     |
| <i>Granatocerinus</i> .....                                                        | 537     |
| <i>G. glaber</i> , M. & W., 1869, pl. xx, fig. 11.....                             | 537-539 |
| <i>Mollusca.</i>                                                                   |         |
| <i>Lamellibranchiata.</i>                                                          |         |
| <i>Lithophaga ? pertenuis</i> , M. & W., 1865, pl. xxii, fig. 1.....               | 539-540 |
| <i>Myalina</i> .....                                                               | 540     |
| <i>M. St. ludovici</i> , Worthen MSS., pl. xxii, fig. 3.....                       | * 540   |
| <i>Chænomya</i> , M. & W.....                                                      | 540     |
| <i>C. ? rhomboidea</i> , M. & W., 1865, pl. xxii, fig. 4.....                      | 540-541 |
| <i>Pteropoda.</i>                                                                  |         |
| <i>Conularia</i> .....                                                             |         |
| <i>C. missouriensis</i> , Swallow ? 1860, pl. xxii, fig. 5.....                    | 541-542 |
| <i>Cephalopoda.</i>                                                                |         |
| <i>Nautilus</i> .....                                                              | 543     |
| <i>N. (Temnocheilus) coxanus</i> , M. & W., 1869, pl. xxiii, fig. 1.....           | 543-544 |
| <i>N. (Solenocleilus) collectus</i> , M. & W., 1870, pl. xxiii, figs. 3 and 4..... | 544-545 |

## FOSSILS OF THE CHESTER GROUP.

|                                                                                |         |
|--------------------------------------------------------------------------------|---------|
| <i>Echinodermata.</i>                                                          |         |
| <i>Poteriocrinites</i> .....                                                   | 546     |
| <i>P. biselli</i> , Worthen MSS., pl. xxi, fig. 4.....                         | 546-547 |
| Subgenus <i>Zeacrinus</i> .....                                                | 547     |
| <i>P. (Zeacrinus ?) armiger</i> , M. & W., 1870, pl. xxi, fig. 3.....          | 547-548 |
| <i>P. (Zeacrinus) subtumidus</i> , Worthen MSS., pl. xxi, fig. 1.....          | 548-549 |
| <i>P. (Zeacrinus) formosus</i> , Worthen MSS., pl. xxi, fig. 2.....            | 549     |
| Subgenus <i>Scaphiocerinus</i> .....                                           | 550     |
| <i>P. (Scaphiocerinus) bayensis</i> , M. & W., 1865, pl. xx, fig. 2.....       | 550-551 |
| <i>P. (Scaphiocerinus) randolphensis</i> , Worthen MSS., pl. xxi, fig. 14..... | 551-552 |
| <i>Onychocerinus</i> .....                                                     | 552     |
| <i>O. whitfieldi</i> , Hall sp., 1858, pl. xx, fig. 3.....                     | 552-554 |
| <i>Eupachycrinus</i> .....                                                     | 554     |



|                                                             | Page    |
|-------------------------------------------------------------|---------|
| <i>E. boydii</i> , M. & W., 1870, pl. xxi, fig. 6.....      | 554-555 |
| <i>Platycrinites</i> .....                                  | 555     |
| <i>P. parvulus</i> , M. & W., 1865, pl. xx, fig. 7.....     | 555-556 |
| <i>Agassizocrinus</i> .....                                 | 556     |
| <i>A. pentagonus</i> , Worthen MSS., pl. xxi, fig. 10.....  | 556-557 |
| <i>A. conicus</i> , O. & S., 1851, pl. xxi, fig. 8.....     | 557     |
| <i>A. gibbosus</i> , Worthen MSS., pl. xxi, fig. 12.....    | 557-558 |
| <i>A. gibbosus</i> , Hall, 1858, pl. xxi, fig. 11.....      | 558     |
| <i>A. chesterensis</i> , Worthen MSS., pl. xxi, fig. 9..... | 558     |
| <i>Pterolocrinus</i> , L. & C.....                          | 559     |
| <i>P. depressus</i> , L. & C. † 1860, pl. xxi, fig. 13..... | 559     |
| <i>Graphiocrinus</i> .....                                  | 559     |
| <i>G. daetylus</i> , Hall, 1860, pl. xx, fig. 9.....        | 559     |

## FOSSILS OF THE COAL-MEASURES.

## Foraminifera.

|                                                             |     |
|-------------------------------------------------------------|-----|
| <i>Fusulina</i> , Fischer.....                              | 560 |
| <i>F. gracilis</i> , Meek † 1864, pl. xxiv, fig. 7.....     | 560 |
| <i>F. ventricosa</i> , M. & H., 1864, pl. xxiv, fig. 8..... | 560 |

## Radiata.

|                                                                                                       |         |
|-------------------------------------------------------------------------------------------------------|---------|
| <i>Lophophyllum</i> , Edwards & Halme.....                                                            | 560     |
| <i>L. proliferum</i> , McC. sp., 1860, pl. xxiv, fig. 1.....                                          | 560     |
| <i>Eriocrinus</i> .....                                                                               | 561     |
| <i>E. typus</i> , M. & W., 1865, pl. xxiv, fig. 6.....                                                | 561     |
| <i>Poteriocrinites</i> .....                                                                          | 561     |
| <i>P. macoupinensis</i> , Worthen MSS., pl. xxiv, fig. 3.....                                         | 561     |
| Subgenus <i>Scaphiocrinus</i> .....                                                                   | 561     |
| <i>P. (Scaphiocrinus?) hemisphericus</i> , Shum. sp., 1858, pl. xxiv, fig. 5.....                     | 561     |
| <i>P. (Scaphiocrinus) carbonarius</i> , M. & W., 1861, pl. xxiv, fig. 2.....                          | 562     |
| Subgenus <i>Zeacrinus</i> .....                                                                       | 563     |
| <i>P. (Zeacrinus?) mucrospinus</i> , McC., 1859, pl. xxiv, fig. 12.....                               | 563     |
| <i>P. (Zeacrinus) [Hydreionocrinus?]</i> <i>acanthophorus</i> , M. & W., 1870, pl. xxiv, fig. 11..... | 563-565 |
| <i>Eupachycrinus</i> .....                                                                            | 565     |
| <i>E. jayettensis</i> , Worthen MSS., pl. xxiv, fig. 10.....                                          | 565-566 |
| <i>E. tuberculatus</i> , M. & W., 1860, pl. xxiv, fig. 9.....                                         | 566     |
| <i>Agassizocrinus carbonarius</i> , Worthen MSS., pl. xxiv, fig. 4.....                               | 566     |

## Mollusca.

## Brachipoda.

|                                                                   |         |
|-------------------------------------------------------------------|---------|
| <i>Chonetes</i> , Fischer.....                                    | 566     |
| <i>C. millepunctata</i> , M. & W., 1870, pl. xxv, fig. 3.....     | 566-569 |
| <i>Productus</i> , Sowerby.....                                   | 569     |
| <i>P. nebrascensis</i> , Owen, 1852, pl. xxv, fig. 8.....         | 569     |
| <i>P. longispinus</i> , Sowerby † 1814, pl. xxv, fig. 10.....     | 569     |
| <i>P. punctatus</i> , Martin, 1809, pl. xxv, fig. 13.....         | 569     |
| <i>P. laxallensis</i> , Worthen MSS., pl. xxv, fig. 9.....        | 569-570 |
| <i>Chonetes smithii</i> , N. & P., 1855, pl. xxv, fig. 11.....    | 570     |
| <i>Hemipronites</i> , Pander.....                                 | 570     |
| <i>H. crossus</i> , M. & W., 1858, pl. xxv, fig. 12.....          | 570     |
| <i>Athyris</i> , McCoy.....                                       | 570     |
| <i>A. subtilita</i> , Hall's sp., pl. xxv, fig. 14.....           | 571     |
| <i>Syntrielusma</i> , M. & W.....                                 | 571     |
| <i>S. hemiplicata</i> , Hall's sp., 1852, pl. xxvi, fig. 20.....  | 571     |
| <i>Meekella</i> , White & St. John.....                           | 571     |
| <i>M. striato-costata</i> , Cox sp., 1857, pl. xxvi, fig. 21..... | 571     |
| <i>Rhynchonella</i> , Fischer.....                                | 571     |
| <i>R. osageensis</i> , Swallow, 1858, pl. xxvi, fig. 22.....      | 571     |
| <i>Orthis</i> , Dalman.....                                       | 571     |
| <i>O. carbonaria</i> , Swallow.....                               | 571     |
| <i>Terebratulula</i> , Lihwyd.....                                | 572     |
| <i>T. bovidens</i> , Morton, 1836, pl. xxv, fig. 15.....          | 572     |
| <i>Discina</i> , Lamarck, 1819.....                               | 572     |
| <i>D. nitida</i> , Phillips sp. † pl. xxv, fig. 1.....            | 572     |
| <i>Lingula</i> , Bruguière, 1789.....                             | 572     |
| <i>L. mytiloides</i> , Sowerby † 1813, pl. xxv, fig. 2.....       | 572     |
| <i>Spirifer fullonensis</i> , Worthen, MSS. pl. xxv, fig. 5.....  | 572-573 |
| <i>Spirifer cameratus</i> , Morton, pl. xxv, fig. 7.....          | 573     |

|                                                                               | Page    |
|-------------------------------------------------------------------------------|---------|
| <i>Lamellibranchiata.</i>                                                     |         |
| <i>Monotis</i> .....                                                          | 573     |
| <i>M. ? gregaria</i> , M. & W., 1870, pl. xxvi, fig. 5.....                   | 573-574 |
| <i>Macrodon</i> , Lycett .....                                                | 575     |
| <i>M. ? delicatus</i> , M. & W., 1870, pl. xxvi, fig. 3.....                  | 575     |
| <i>M. ? tenuistriatus</i> , M. & W., 1867, pl. xxvi, fig. 4.....              | 576     |
| <i>Aricula</i> .....                                                          | 576     |
| <i>A. morganensis</i> , M. & W., 1866, pl. xxvi, fig. 14.....                 | 576-578 |
| <i>A. longa</i> , Geinitz sp., 1866, pl. xxvi, fig. 1.....                    | 578     |
| <i>Placunopsis</i> .....                                                      | 578     |
| <i>P. carbonaria</i> , M. & W., 1866, pl. xxvii, fig. 2.....                  | 578-579 |
| <i>Schizodus</i> , King .....                                                 | 579     |
| <i>S. amplius</i> , M. & W., 1870, pl. xxvii, fig. 6.....                     | 579-580 |
| <i>S. (Prisconia) perelegans</i> , M. & W., 1870, pl. xxvi, fig. 19.....      | 581     |
| <i>S. curtus</i> , M. & W., 1866, pl. xxvi, fig. 16.....                      | 582     |
| <i>Myalina</i> , de Koninck .....                                             | 582     |
| <i>M. perattenuata</i> , M. & W., 1858, pl. xxvi, fig. 11.....                | 582     |
| <i>Edmondia</i> .....                                                         | 583     |
| <i>E. ? peroblonga</i> , M. & W., 1866, pl. xxvii, fig. 4.....                | 583-584 |
| <i>Clinopistha</i> , M. & W. ....                                             | 584     |
| <i>C. radiata</i> , var. <i>levie</i> , M. & W., 1870, pl. xxvii, fig. 7..... | 584-585 |
| <i>Allorisma</i> , King .....                                                 | 585     |
| <i>A. costata</i> , M. & W., 1869, pl. xxvi, fig. 15.....                     | 585-586 |
| <i>A. geinitzii</i> , Meek, 1867, pl. xxvi, fig. 23.....                      | 586     |
| <i>Chænocardia</i> , M. & W. ....                                             | 586     |
| <i>C. ovata</i> , M. & W., 1869, pl. xxvii, fig. 5.....                       | 586-587 |
| <i>Chænomys</i> , M. & W. ....                                                | 588     |
| <i>C. minnehaha</i> , Swallow sp., 1858, pl. xxvii, fig. 3.....               | 588     |
| <i>Cardiomorpha</i> .....                                                     | 588     |
| <i>C. missouriensis</i> , Shum., 1860, pl. xxvii, fig. 8.....                 | 588     |
| <i>Entolium</i> , Meek .....                                                  | 588     |
| <i>E. aviculatum</i> , Swallow sp., 1858, pl. xxvi, fig. 12.....              | 588     |
| <i>Iama</i> , Bruguière .....                                                 | 588     |
| <i>I. retifera</i> , Shum., 1858, pl. xxvi, fig. 2.....                       | 588     |
| <i>Aviculopecten neglectus</i> , Geinitz sp., 1866, pl. xxvi, fig. 7.....     | 589     |
| <i>Pleurophorus</i> , King .....                                              | 589     |
| <i>P. oblongus</i> , Meek ? 1872, pl. xxvi, fig. 6.....                       | 589     |
| <i>Nucula</i> , Lamarck .....                                                 | 589     |
| <i>N. parva</i> , McC., 1860, pl. xxvi, fig. 8.....                           | 589     |
| <i>N. beyrichi</i> , v. Schauder, 1854, pl. xxvi, fig. 9.....                 | 589     |
| <i>Gasteropoda.</i>                                                           |         |
| <i>Dentalium</i> , Linnaeus .....                                             | 589     |
| <i>D. ? annulostratum</i> , M. & W., 1870, pl. xxix, fig. 7.....              | 589-590 |
| <i>D. meekianum</i> , Geinitz ? 1866, pl. xxix, fig. 8.....                   | 590     |
| <i>Orthonema</i> , M. & W., 1861.....                                         | 590     |
| <i>O. conica</i> , M. & W., 1866, pl. xxix, fig. 5.....                       | 590-591 |
| <i>Naticopsis</i> , McCoy .....                                               | 592     |
| <i>N. ventrica</i> , N. & P., 1855, sp., pl. xxviii, fig. 13.....             | 592-593 |
| <i>Macrochelus</i> , Phillips .....                                           | 593     |
| <i>M. altonensis</i> , Worthen MSS., pl. xxviii, fig. 8.....                  | 593-594 |
| <i>M. newberryi</i> , Stevens sp., pl. xxviii, fig. 14.....                   | 594     |
| <i>Actæonina</i> , d'Orbigny .....                                            | 594     |
| <i>A. minuta</i> , Stevens sp., pl. xxix, fig. 2.....                         | 594     |
| <i>Platyceras</i> , Conrad .....                                              | 594     |
| <i>P. spinigerum</i> , Worthen MSS., pl. xxviii, fig. 4.....                  | 594-595 |
| <i>Naticopsis subocatus</i> , Worthen MSS., pl. xxviii, fig. 9.....           | 595     |
| <i>Naticopsis wheeleri</i> , Swallow sp., 1860, pl. xxviii, fig. 3.....       | 595     |
| <i>Naticopsis altonensis</i> , McC., 1865, pl. xxviii, fig. 11.....           | 595     |
| <i>Streptacis</i> .....                                                       | 596     |
| <i>S. whitfieldi</i> , Meek, 1871, pl. xxix, fig. 1.....                      | 596     |
| <i>Luxonema</i> .....                                                         | 596     |
| <i>L. semistriata</i> , Meek, 1871, pl. xxix, fig. 2.....                     | 596     |
| <i>Actis</i> , Loven .....                                                    | 596     |
| <i>A. robusta</i> , Stevens, 1858, pl. xxix, fig. 6.....                      | 596     |
| <i>Polyphemopsis</i> , Fortlock .....                                         | 596     |
| <i>P.</i> , M. & W., 1865, pl. xxviii, fig. 7.....                            | 596-597 |



|                                                                                      | Page.   |
|--------------------------------------------------------------------------------------|---------|
| <i>Anomphalus</i> , M. & W. ....                                                     | 597     |
| <i>A. rotulus</i> , M. & W., 1866, pl. xxix, fig. 10 .....                           | 597     |
| <i>Microdoma</i> , M. & W. ....                                                      | 598     |
| <i>M. conica</i> , M. & W., 1866, pl. xxviii, fig. 2 .....                           | 598     |
| <i>Murchisonia inornata</i> , M. & W., 1866, pl. xxviii, fig. 6 .....                | 599-600 |
| <i>Pleurotomaria coxana</i> , M. & W., 1866, pl. xxviii, fig. 15 .....               | 600     |
| <i>Pleurotomaria spironeuma</i> , M. & W., 1866, pl. xxviii, fig. 5 .....            | 601-602 |
| <i>Pleurotomaria valvuliformis</i> , M. & W., 1866, pl. xxix, fig. 9 .....           | 602-603 |
| <i>Pleurotomaria conoides</i> , M. & W., 1866, pl. xxviii, fig. 1 .....              | 603-604 |
| <i>Straparollus</i> , Montfort .....                                                 | 604     |
| <i>S. (Euomphalus) pernodosus</i> , M. & W., 1870, pl. xxix, fig. 14 .....           | 604-605 |
| <i>S. (Euomphalus) subquadratus</i> , M. & W., 1870, pl. xxix, figs. 12 and 13 ..... | 605-607 |
| <i>S. (Euomphalus) subrugosus</i> , M. & W., pl. xxix, fig. 11 .....                 | 607     |
| <i>Chiton</i> , Linnaeus .....                                                       | 608     |
| <i>C. carbonarius</i> , Stevens, 1859, pl. xxix, fig. 15 .....                       | 608     |
| <i>Cephalopoda.</i>                                                                  |         |
| <i>Nautilus (Temnocheilus) latus</i> , M. & W., 1870, pl. xxx, fig. 2 .....          | 608-609 |
| <i>N. (Temnocheilus) winlowi</i> , M. & W., 1870, pl. xxxii, fig. 2 .....            | 609-610 |
| <i>N. lasallensis</i> , M. & W., 1866, pl. xxxi, fig. 1 .....                        | 610-611 |
| <i>Goniatites compactus</i> , M. & W., 1865, pl. xxxi, fig. 2 .....                  | 611-612 |
| <i>Orthoceras</i> .....                                                              | 612     |
| <i>O. rushensis</i> , McC.† 1860, pl. xxx, fig. 4 .....                              | 612     |
| <i>Articulata.</i>                                                                   |         |
| <i>Phillipsia</i> , Portlock .....                                                   | 612     |
| <i>P. (Griffithides) scitula</i> , M. & W., 1865, pl. xxxii, fig. 3 .....            | 612-615 |
| <i>P. (Griffithides) ? sangamonensis</i> , M. & W., 1865, pl. xxxii, fig. 4 .....    | 615-618 |
| <i>Dithyrocaris</i> , Scouler .....                                                  | 618     |
| <i>D. carbonarius</i> , M. & W., 1869, pl. xxxii, fig. 1 .....                       | 618-619 |

## 92.

MEEK, F. B. Notes on some of the Fossils figured in the recently issued Fifth volume of the Illinois State Geological Report. <Am. Jour. Sci., vol. vii, 3d ser., pp. 189-193; continued on pp. 369-376 and 484-490 and 580-584. 1874. New Haven, 1874.

In this series of articles Mr. Meek revises and extends the descriptions of a large number of the species embraced in the fifth volume of Illinois Geological Report, and also presents some very important philosophical discussions of the relations of the species and of the higher groups.

|                                                                     | Page.   |
|---------------------------------------------------------------------|---------|
| <i>Actinocrinites sculptilis</i> , Hall .....                       | 190-191 |
| <i>Tazocrinus thiemei</i> , Hall .....                              | 191-192 |
| <i>Batoocrinus pyriformis</i> , Shumard .....                       | 192     |
| <i>Actinocrinites delicatus</i> , M. & W. ....                      | 192-193 |
| <i>Actinocrinites Cyathocrinites</i> , Codonites, etc .....         | 369-374 |
| <i>Codonites stelliformis</i> .....                                 | 374-375 |
| <i>Pholidocidaris irregularis</i> , M. & W. ....                    | 375     |
| <i>Pentremites (Troostocrinus) ? woodmani</i> , M. & W. ....        | 375-376 |
| <i>Agassizocrinus</i> , Troost .....                                | 484     |
| <i>Fusulina gracilis</i> .....                                      | 484     |
| <i>Fusulina ventricosa</i> .....                                    | 484     |
| <i>Zeacrinus (Hydreionocrinus) ? acanthophorus</i> , M. & W. ....   | 485-486 |
| <i>Archæocidaris ?</i> , sp. undt .....                             | 486     |
| <i>Septopora cestriensis</i> , Prout .....                          | 486-488 |
| <i>Synocladia virgulacea</i> var. <i>biseriatis</i> , Swallow ..... | 486-488 |
| <i>Aviculopecten neglectus</i> , Geinitz .....                      | 488-489 |
| <i>Aviculopecten carboniferus</i> , Stevens sp .....                | 489     |
| <i>Nuculana</i> , sp. undt., Meek, 1874 .....                       | 489-490 |
| <i>Edmonadia ovata</i> , .....                                      | 580     |
| <i>Schizodus rostricus</i> , de Verneuil .....                      | 580-580 |
| <i>Solenomya</i> sp. undt., Meek, 1874 .....                        | 582-583 |
| <i>Placunopsis carbonaria</i> , M. & W. ....                        | 583     |
| <i>Anomphalus rotulus</i> , M. & W. ....                            | 583     |
| <i>Euomphalus rugosus</i> , Hall .....                              | 583-584 |
| <i>Pleurotomaria gurtleyi</i> .....                                 | 584     |

## 93.

MEEK, F. B. The new genus *Euchondria*. <Am. Journ. Sci., vol. vii, 3d ser., p. 445. 1874. New Haven, 1874.

Mr. Meek, in a brief note, proposes the generic name *Euchondria*, of which the *Pala neglectus* of Geinitz is the type.

## 94.

MEEK, F. B. [Descriptions of] *Plenrotomaria taggarti*. <Hayden's Ann. Rep. U. S. Geol. and Geog. Surv. of the Terr. for 1873, p. 231, foot-note. Washington, 1874. Carboniferous.

|                                                        | Page. |
|--------------------------------------------------------|-------|
| <i>Plenrotomaria taggarti</i> , n. s., Meek, 1874..... | 231   |

## 95.

MEEK, F. B. Notes on some fossils from near the eastern base of the Rocky Mountains, west of Greeley and Evans, Colorado, and others from about two hundred miles further eastward, with descriptions of a few new species. < Bulletin U. S. Geol. and Geog. Surv. of the Terr., 2d ser., No. 1, pp. 39-47. 1875. Washington, 1875.

These fossils are from the Fox Hills and Laramie (Lignitic) Group.

|                                                                                    | Page. |
|------------------------------------------------------------------------------------|-------|
| <i>Anomia micronema</i> , n. s., Meek, 1875 .....                                  | 43    |
| <i>Corbiola</i> ? ( <i>Leptæthes</i> ) <i>planumbona</i> , n. s., Meek, 1875 ..... | 43-45 |
| <i>Cyrena</i> ? <i>holmesi</i> , n. s., Meek, 1875 .....                           | 45-46 |
| <i>Sphæriola</i> ? <i>obliqua</i> , n. s., Meek, 1875 .....                        | 46    |
| <i>Rhynchonella endlichi</i> , n. s., Meek, 1875 .....                             | 46-47 |

## 96.

MEEK, F. B. Description of *Unio* supposed to be of Triassic age. < Ann. Rep. Geogr. Expl. and Surv. West of the 100th Merid., by G. M. Wheeler, Appendix L L of the Ann. Rep. Chief of Engineers for 1875, pp. 83, 84. Washington, 1875.

|                                                   | Page. |
|---------------------------------------------------|-------|
| <i>Unio cristatensis</i> , n. s., Meek, 1875..... | 83-84 |
| <i>Unio gullinensis</i> , n. s., Meek, 1875.....  | 84    |
| <i>Unio terra rubra</i> , n. s., Meek, 1875.....  | 84    |

## 97.

MEEK, F. B. Description of *Olenellus gilberti* and *O. howelli*. <Rep. Geogr. and Geol. Expl. and Surv. West of the 100th Merid., 4<sup>m</sup>, vol. iii, Geology, pp. 182, 183. 1875. Washington, 1875.

These two species are fully described and illustrated in White's Report on Invertebrate Paleontology, part I, Vol. iv, Wheeler's Expl. and Surv. West of the 100th Meridan.

|                                                                             | Page.   |
|-----------------------------------------------------------------------------|---------|
| <i>Olenus</i> ( <i>Olenellus</i> ) <i>gilberti</i> , n. s., Meek, 1875..... | 182-183 |
| <i>Olenus</i> ( <i>Olenellus</i> ) <i>howelli</i> , n. s., Meek, 1875.....  | 183     |

## 98.

MEEK, F. B. A report on some of the Invertebrate fossils of the Waverly group and Coal Measures of Ohio. < Rep. Geol. Surv. of Ohio, vol. ii, part ii, Paleontology, pp. 369-317, plates x-xx. 1875. Columbus, 1875.

## WAVERLY GROUP SPECIES.

| Mollusca       |                                                                                  | Page.   |
|----------------|----------------------------------------------------------------------------------|---------|
| <i>Polysia</i> |                                                                                  |         |
|                | <i>Pancostella</i> , <i>lunulata</i> , 1837 .....                                | 273     |
|                | <i>P. deltoidea</i> , Meek, 1871, pl. x, figs. 2 a, d .....                      | 273-274 |
|                | <i>P. multipunctata</i> (var. <i>latissima</i> ), Meek, pl. x, figs. 1 a, c..... | 274-275 |

|                                                                                                   | Page.   |
|---------------------------------------------------------------------------------------------------|---------|
| <b>Brachiopoda.</b>                                                                               |         |
| <i>Lingula</i> , Bruguière, 1792 .....                                                            | 275     |
| <i>L. (Lingulella) ? membranacea</i> , Winchell, 1863, pl. xiv, fig. 4 .....                      | 275     |
| <i>L. melie</i> , Hall ? 1864, pl. xiv, fig. 3 .....                                              | 276     |
| <i>L. scotica</i> , Davidson ? 1868, pl. xiv, fig. 9 .....                                        | 276-277 |
| <i>Discina</i> , Lamarek, 1819 .....                                                              | 277     |
| Subgenus <i>Orbiculoidea</i> , d'Orbigny, 1847 .....                                              | 277     |
| <i>D. (Orbiculoidea) newberryi</i> , Hall, 1864, pl. xiv, figs. 1 a-d .....                       | 277-278 |
| <i>D. (Orbiculoidea) ? pleurites</i> , Meek, n. s., 1875, pl. xiv, figs. 2 a, b .....             | 278-279 |
| <i>Strophomena</i> , Rafinesque, 1827 .....                                                       | 279     |
| Subgenus <i>Hemipronites</i> , Pander, 1839 .....                                                 | 279     |
| <i>S. (Hemipronites) crenistria</i> , Phillips ? sp., 1836, pl. x, figs. 5 a-d .....              | 279-283 |
| <i>Productus</i> , Sowerby, 1814 .....                                                            |         |
| <i>Productus</i> sp., Meek, 1875, pl. x, figs. 4 a-d .....                                        | 282-283 |
| <i>Productus</i> sp., Meek, 1875, pl. x, fig. 3 .....                                             | 283     |
| <i>Athyria</i> , McCoy, 1844 .....                                                                | 283     |
| <i>A. lamellosa</i> , Leveillé ? sp., 1835, pl. xiv, figs. 6 a, b .....                           | 283-285 |
| <i>Spirifer</i> , Sowerby, 1815 .....                                                             | 285     |
| <i>S. carteri</i> , Hall, 1857, pl. xiv, figs. 7 a-c, (d ?) .....                                 | 285-288 |
| Subgenus <i>Trigonotreta</i> , King, 1825 .....                                                   | 289     |
| <i>S. (Trigonotreta) striatiformis</i> , n. s., Meek, 1875, pl. xiv, figs. 8 a-e .....            | 289-290 |
| <i>S. (Trigonotreta) buplicatus</i> , Hall ? 1858, pl. xiv, fig. 5 .....                          | 290-292 |
| <b>Lamellibranchiata.</b>                                                                         |         |
| <i>Entolium</i> , Meek .....                                                                      | 292     |
| <i>E. shumardianum</i> Winchell ? sp., 1865, pl. xv, figs. 4 a, b .....                           | 292-294 |
| <i>Aviculopecten</i> , McCoy, 1851 .....                                                          | 295     |
| <i>A. creniatriatus</i> , Meek, 1871, pl. xv, figs. 7 a, b .....                                  | 295-296 |
| <i>A. winchelli</i> n. s., Meek, 1875, pl. xv, figs. 5 a and 5 b ? .....                          | 296-298 |
| <i>Palæoneilo</i> , Hall, 1870 ? .....                                                            | 298     |
| <i>P. bedfordensis</i> n. s., Meek, 1875, pl. xv, figs. 3 a-c .....                               | 298     |
| <i>Schizodus</i> , King, 1844 .....                                                               | 299     |
| <i>S. medicensis</i> , Meek, 1871, pl. xv, figs. 1 a-c .....                                      | 299-300 |
| <i>Grammysia</i> , De Verneuil, 1847 .....                                                        | 300     |
| <i>G. ? hannibalensis</i> , Shumard sp., 1855, pl. xvi, figs. 5 a-c .....                         | 300-301 |
| <i>G. ? rhomboides</i> , Meek, 1871, pl. xvi, figs. 7 a, b .....                                  | 302-303 |
| <i>G. ventricosa</i> , Meek, 1871, pl. xvi, figs. 6 a, b (and pl. xiii, figs. 5 a, b, var.) ..... | 303     |
| <i>Edmondia</i> , De Koninck, 1844 .....                                                          | 304     |
| <i>E. tapesiformis</i> n. s., Meek, 1875, pl. xiii, fig. 6 .....                                  | 304     |
| <i>Cardiomorpha</i> , De Koninck, 1844 .....                                                      | 304     |
| <i>C. subglobosa</i> n. s., Meek, 1875, pl. xv, figs. 6 a, b .....                                | 304-305 |
| <i>Prothyris</i> , Meek, 1869 .....                                                               | 305     |
| <i>P. meeki</i> , Winchell, MS., 1872, pl. xv, fig. 2 .....                                       | 305-306 |
| <i>Sanguinolites</i> , McCoy, 1844 .....                                                          | 306     |
| <i>S. ? obliquus</i> , Meek, 1871, pl. xvi, figs. 2 a, b .....                                    | 306-307 |
| <i>S. æolus</i> , Hall, Whitfield, 1870 ? pl. xvi, figs. 1 a-c .....                              | 307-308 |
| <i>Promacrus</i> , Meek, 1871 .....                                                               | 308     |
| <i>P. andrewsi</i> , Meek, 1871, pl. xvii, figs. 1 a, b .....                                     | 308-309 |
| <i>Allorisma</i> , King, 1844 .....                                                               | 309     |
| <i>A. (Cercomyopsis) pleuropistha</i> , Meek, 1871, pl. xiii, figs. 4 a-e .....                   | 309-311 |
| <i>A. winchelli</i> , Meek, 1871, pl. xvi, figs. 3 a-c .....                                      | 311-312 |
| <i>A. ventricosa</i> , Meek, 1871, pl. xvi, figs. 4 a, b .....                                    | 312-313 |
| <b>Gastropoda.</b>                                                                                |         |
| <i>Platyceras</i> , Conrad, 1840 .....                                                            | 313     |
| <i>P. (Orthonychia) ? lodienae</i> , Meek, 1871, pl. xiii, figs. 1 a, b .....                     | 313-314 |
| <i>Pleurotomaria</i> , DeFrance, 1826 .....                                                       | 314     |
| <i>P. textiliger</i> , Meek, 1871, pl. xiii, figs. 7 a, b .....                                   | 314-315 |
| <b>Pteropoda.</b>                                                                                 |         |
| <i>Conularia</i> , Miller, 1818 .....                                                             | 316     |
| <i>C. micronema</i> , Meek, 1871, pl. xviii, figs. 1 a-d .....                                    | 316     |
| <i>C. newberryi</i> , Hall, pl. xviii, figs. 2 a, b .....                                         | 316-317 |
| <b>Orustacea.</b>                                                                                 |         |
| <b>Entomostraca.</b>                                                                              |         |
| <i>Ceraticaris</i> , McCoy .....                                                                  | 317     |
| † Subgenus <i>Colpocaris</i> , Meek, 1872 .....                                                   | 317     |
| <i>C. (Colpocaris) bradleyi</i> , Meek, 1872, pl. xviii, figs. 6 a-e .....                        | 318-319 |



|                                                                                     | Page.   |
|-------------------------------------------------------------------------------------|---------|
| <i>C. (Colpocaris) elytroides</i> , Meek, 1872, pl. xviii, figs. 5 a-c.....         | 319-320 |
| Subgenus <i>Solenocaris</i> , Meek, 1872.....                                       | 320-321 |
| <i>C. (Solenocaris) strigata</i> , Meek 1872, pl. xviii, figs. 4 a-c.....           | 321     |
| <i>Tetradacopoda</i> .                                                              |         |
| <i>Archaeocaris</i> , Meek, 1872.....                                               | 321     |
| <i>A. vermiformis</i> , Meek, 1872, pl. xviii, fig. 7.....                          | 321-322 |
| <i>Trilobita</i> .                                                                  |         |
| <i>Phillipsia</i> , Portlock, 1843.....                                             | 322     |
| <i>P. (Griffithides?) lodiensis</i> , n. s., Meek, 1875, pl. xviii, fig. 3.....     | 322-325 |
| COAL MEASURE SPECIES.                                                               |         |
| <i>Mollusca</i> .                                                                   |         |
| <i>Polyzoa</i> .                                                                    |         |
| <i>Syncladia</i> , King, 1849.....                                                  | 326     |
| <i>S. biserialis</i> , Swallow, 1858, pl. xx, figs. 5 a, b.....                     | 326-327 |
| <i>Ptilodictya</i> , Lonsdale, 1839.....                                            | 327     |
| <i>P. (Stictopora) sereata</i> , n. s., Meek, 1875, pl. xx, fig. 4.....             | 327-328 |
| <i>P. (Stictopora) carbonaria</i> , Meek, 1871, pl. xx, figs. 3 a, b.....           | 328     |
| <i>Brachiopoda</i> .                                                                |         |
| <i>Spirifer</i> , Sowerby, 1815.....                                                | 329     |
| <i>S. (Trigonotreta) opinus</i> , Hall? 1858, pl. xix, figs. 14 a-d (e?).....       | 329-330 |
| <i>Mollusca (Proper)</i> .                                                          |         |
| <i>Lamellibranchiata</i> .                                                          |         |
| <i>Aviculopecten</i> , McCoy, 1851.....                                             | 330     |
| <i>A. (Streblopteria?) hertzeri</i> , n. s., Meek, 1875, pl. xix, figs. 13 a-c..... | 330-331 |
| <i>Placunopsis</i> , Morris & Lycett, 1853.....                                     | 331     |
| <i>P. reticularis</i> , n. s., Meek, 1875, pl. xix, fig. 12.....                    | 331-333 |
| <i>Posidonomya</i> , Brown, 1837.....                                               | 333     |
| <i>P. fracta</i> , n. s., Meek, 1875, pl. xix, figs. 7 a, b.....                    | 333-334 |
| <i>Macrodon</i> , Lycett, 1845.....                                                 | 334     |
| <i>M. obsoletus</i> , Meek, 1871, pl. xix, fig. 9.....                              | 334-335 |
| <i>Yoldia</i> , Müller, 1842.....                                                   | 335     |
| <i>Y. stevensoni</i> , Meek, 1871, pl. xix, figs. 4 a, b.....                       | 335     |
| <i>Y. (Palaeoneilo?) carbonaria</i> , Meek, 1871, pl. xix, fig. 5.....              | 336     |
| <i>Schizodus</i> , King, 1844.....                                                  | 336     |
| <i>S. cuneatus</i> , n. s., Meek, 1875, pl. xx, fig. 7.....                         | 336-337 |
| <i>Aviculopinna americana</i> , Meek, 1867, pl. xx, fig. 2.....                     | 337-338 |
| <i>Pleurophorus</i> , King, 1844.....                                               | 338     |
| <i>P. tropidophorus</i> , n. s., Meek, 1875, pl. xix, figs. 10 a, b.....            | 338-339 |
| <i>Solenomya</i> , Lamarck, 1818.....                                               | 339     |
| <i>S. ? anodontoidea</i> , n. s., Meek, 1875, pl. xix, fig. 11.....                 | 339-340 |
| <i>Astartella</i> , Hall, 1858.....                                                 | 340     |
| <i>A. neuberryi</i> , n. s., Meek, 1875, pl. xix, fig. 3.....                       | 340-341 |
| <i>A. varica</i> , McChesney, 1860, pl. xix, fig. 2.....                            | 341     |
| <i>Astartella</i> , sp., Meek, pl. xix, fig. 1 a, b.....                            | 341-342 |
| <i>Cypriocardina</i> , Hall, 1860.....                                              | 342     |
| <i>C. ? carbonaria</i> , Meek, 1871, pl. xix, fig. 8 a, b.....                      | 342-343 |
| <i>Allorisma</i> , King, 1844.....                                                  | 343     |
| <i>A. costata</i> , M. & W., 1869, pl. xix, figs. 6 a, b.....                       | 344-345 |
| <i>Gastropoda</i> .                                                                 |         |
| <i>Platyceras</i> , Conrad, 1840.....                                               | 345     |
| <i>P. tortum</i> , Meek, 1871, pl. xx, figs. 1 a-c.....                             | 345     |
| <i>Macrochelus</i> , Phillips, 1841.....                                            | 346     |
| <i>M. klippiarti</i> , Meek, 1872, pl. xx, figs. 6 a-c.....                         | 346-347 |

## 99.

MEEK, F. B., and A. H. WORTHEN. Paleontology of Illinois. Descriptions of Invertebrates. <Geological Survey of Illinois, vol. vi, section ii, pp. 491-532, plates 23-32. 1875. Springfield, 1875.

Published by authority of the legislature, 1875.

Genus *Carbonaria*. A portion of these descriptions are by Mr. Worthen alone, and are not mentioned in the following list:



LOWER SILURIAN SPECIES.

| Echinodermata.                                                             | Page.   |
|----------------------------------------------------------------------------|---------|
| <i>Homocrinus</i> , Hall.....                                              | 492     |
| <i>H. angustatus</i> , M. & W., 1870, pl. xxiii, fig. 8.....               | 492-493 |
| <i>Heterocrinus crassus</i> , M. & W., 1865, pl. xxiii, fig. 1.....        | 493     |
| Mollusca.                                                                  |         |
| Lamellibranchiata.                                                         |         |
| <i>Modiolopsis subnasuta</i> , M. & W., 1870, pl. xxiii, figs. 9 a, b..... | 494-495 |
| Gastropoda.                                                                |         |
| <i>Subulites</i> , Conrad.....                                             | 495     |
| <i>S. inflatus</i> , M. & W., 1869, pl. xxiii, fig. 5.....                 | 495-496 |
| Articulata.                                                                |         |
| <i>Asaphus</i> , Brongniart.....                                           | 497     |
| <i>A. (Isotelus) vigilans</i> , M. & W., 1870, pl. xxiii, fig. 6.....      | 497-498 |

UPPER SILURIAN SPECIES.

|                                                                                |         |
|--------------------------------------------------------------------------------|---------|
| Spongiae.                                                                      |         |
| <i>Astylospongia pramorsa</i> , Goldf. ? sp., 1826, pl. xxv, figs. 2, 2 a..... | 499     |
| Foraminifera?                                                                  |         |
| <i>Receptaculites</i> , DeFrance.....                                          | 500     |
| <i>R. formosus</i> , M. & W., 1870, pl. xxiv, fig. 1.....                      | 500     |
| Brachiopoda.                                                                   |         |
| <i>Stricklandinia</i> , Billings.....                                          | 502     |
| <i>S. deformis</i> , M. & W., 1870, pl. xxiv, figs. 5 a, b.....                | 502-503 |
| Cephalopoda.                                                                   |         |
| <i>Orthoceras</i> , Auct.....                                                  | 503     |
| <i>O. crebristriatum</i> , M. & W., 1865, pl. xxvi, fig. 2.....                | 503-504 |
| <i>O. medullare</i> , Hall ? 1860, pl. xxvi, fig. 1.....                       | 504     |
| <i>O. angulatum</i> , Wahl, 1827, pl. xxiv, fig. 8.....                        | 504     |
| <i>O. jolietensis</i> , M. & W., 1865, pl. xxvi, fig. 5.....                   | 505     |
| <i>Cyrtoceras</i> , Goldfuss.....                                              | 506     |
| <i>C. dardanus</i> , Hall ? 1861, pl. xxv, fig. 6.....                         | 506     |
| <i>Lituites</i> , Breyn.....                                                   | 507     |
| <i>L. graftonensis</i> , M. & W., 1869, pl. xxv, fig. 1.....                   | 507-508 |
| Crustacea.                                                                     |         |
| <i>Lichas</i> , Dalman.....                                                    | 508     |
| <i>L. boltoni</i> , Bigsby, sp., 1825, pl. xxv, fig. 5.....                    | 508     |
| <i>Illaenus</i> , Dalman.....                                                  | 508     |
| <i>I. (Bumastus) graftonensis</i> , M. & W., 1869, pl. xxv, fig. 4.....        | 508-510 |
| <i>Sphaerexochus</i> , Beyrich.....                                            | 510     |
| <i>S. romingeri</i> , Hall, 1862, pl. xxiv, fig. 4.....                        | 510     |
| Mollusca.                                                                      |         |
| Cephalopoda.                                                                   |         |
| <i>Phragmoceras</i> .....                                                      | 511     |
| <i>P. walehii</i> , M. & W., 1866, pl. xxviii, figs. 2 a, b.....               | 511-512 |
| <i>Orthoceras</i> .....                                                        | 512     |
| <i>O. winchelli</i> , M. & W., 1866, pl. xxviii, fig. 1.....                   | 512-513 |

LOWER CARBONIFEROUS SPECIES.

|                                                                                |         |
|--------------------------------------------------------------------------------|---------|
| Echinodermata.                                                                 |         |
| <i>Synbathocrinus</i> , Phillips.....                                          | 514     |
| <i>S. robustus</i> , Shumard, 1866, pl. xxix, fig. 4.....                      | 514     |
| <i>Dichocrinus</i> , Munster.....                                              | 515     |
| <i>D. flexus</i> , Casseday & Lyon, 1860, pl. xxix, fig. 7.....                | 515     |
| <i>Poteriocrinus</i> .....                                                     | 516     |
| Subgenus <i>Scaphiocrinus</i> , Hall.....                                      | 519     |
| <i>P. (Scaphiocrinus) unicus</i> , Hall, 1861, pl. xxix, fig. 1.....           | 519     |
| <i>Pentremites</i> , Say.....                                                  | 521     |
| <i>P. (Tricelocrinus), obliquatus</i> Roemer, sp., 1852, pl. xxxi, fig. 4..... | 521     |
| <i>Spirifer</i> , Sowerby.....                                                 | 521     |
| <i>S. fastigatus</i> , M. & W., 1870, pl. xxx, fig. 3.....                     | 521-523 |
| <i>S. neglectus</i> , Hall, 1858, pl. xxx, figs. 2 a, and 1 c.....             | 523     |
| <i>S. suborbicularis</i> , Hall, 1858, pl. xxx, fig. 1.....                    | 523-524 |

## COAL MEASURE SPECIES.

|                                                                        | Page.   |
|------------------------------------------------------------------------|---------|
| <i>Azophyllum</i> , Edwards & Haime.....                               | 323     |
| <i>A. rudis</i> , White & St. John, pl. xxxii, figs. 6 a-c.....        | 325     |
| <i>Conocardium</i> , Brown.....                                        | 329     |
| <i>C. obliquum</i> , M. & W., 1865, pl. xxxiii, fig. 4.....            | 329     |
| <i>Pleurophorus</i> ? King.....                                        | 329     |
| <i>P. ? angulatus</i> , M. & W., 1865, pl. xxxiii, fig. 5.....         | 329-330 |
| <i>Carbonarea</i> , Meek & Worthen, 1879.....                          | 330     |
| <i>C. gibbosa</i> , M. & W., 1876, pl. xxxiii, fig. 6.....             | 331     |
| <i>Nautilus</i> , Linnaeus.....                                        | 331     |
| <i>N. (Cryptoceras) capax</i> , M. & W., 1865, pl. xxxiii, fig. 1..... | 332     |

## 100.

MEEK, F. B. Notice of a very large *Goniatile* from Eastern Kansas (Carboniferous). <Bulletin U. S. Geol. and Geog. Surv. of the Terr. No. 6, 2d ser., vol. i, p. 445. Washington, 1875.

The author regards it as at most only a variety of *G. globulosus*, Meek & Worthen, although attaining so great size.

|                                                                     | Page. |
|---------------------------------------------------------------------|-------|
| <i>Goniatites globulosus</i> var. <i>excelsus</i> , Meek, 1875..... | 445   |

## 101.

MEEK, F. B. Descriptions and illustrations of fossils from Vancouver's and Suia Islands, and other Northwestern localities. <Bulletin U. S. Geol. and Geog. Surv. of the Terr., vol. ii, No. 4, pp. 351-374, 6 plates. 1876. Washington, 1876.

Carboniferous, Cretaceous, and Tertiary; mostly Cretaceous. A large part of the species embraced in this paper were originally described by the author in 1856 in vol. iv of Transactions Albany Institute, and are here redescribed with others and illustrated.

## CARBONIFEROUS SPECIES.

| <i>Brachiopoda.</i>                                               | Page.   |
|-------------------------------------------------------------------|---------|
| <i>Productus</i> , Sowerby.....                                   | 354     |
| <i>P. latissimus</i> , Sowerby, 1822, pl. i, fig. 1.....          | 354-355 |
| <i>Spirifer</i> , Sowerby.....                                    | 355     |
| <i>S. keokuk</i> , Hall ? 1858, pl. i, figs. 3 and 3 a.....       | 355     |
| <i>Athyris</i> , McCoy, 1844.....                                 | 355     |
| <i>A. subtilis</i> , Hall, sp., 1852, pl. i, figs. 2 and 2 a..... | 355-356 |

## CRETACEOUS SPECIES.

| <i>Lamellibranchiata.</i>                                                                      | Page.   |
|------------------------------------------------------------------------------------------------|---------|
| <i>Nucula</i> , Lamarck.....                                                                   | 356     |
| <i>N. traskana</i> , Meek, 1857.....                                                           | 356     |
| <i>Grammatodon</i> , Meek.....                                                                 | 356     |
| <i>G. ? vancouverensis</i> , Meek, 1857, pl. iii, figs. 5 and 5 a.....                         | 356-357 |
| <i>Arca</i> , Sim.....                                                                         | 357     |
| <i>A. ? equilateralis</i> , Meek, 1857, pl. ii, figs. 6, 6 a.....                              | 357     |
| <i>Inoceramus</i> , Sowerby.....                                                               | 358     |
| <i>I. crispus</i> ? var. <i>subundatus</i> , Meek, 1861, pl. iii, figs. 1, 1 a and 3, 3 a..... | 358-359 |
| <i>I. barabini</i> , Morton, 1834, fig. —.....                                                 | 358     |
| <i>Inoceramus</i> — ? , pl. i, fig. 6.....                                                     | 359     |
| <i>Trigonia</i> , Bruguière.....                                                               | 359     |
| <i>T. evansi</i> , Meek, 1857, pl. ii, figs. 7 a, b.....                                       | 359-360 |
| <i>Protocardia</i> , Beyrich.....                                                              | 360     |
| <i>P. scitula</i> , Meek, 1857, pl. iii, figs. 4 and 4 a.....                                  | 360-361 |
| <i>Cyprina</i> , Conrad.....                                                                   | 361     |
| <i>C. ? tenuis</i> , Meek, 1861, pl. ii, figs. 5 a, b.....                                     | 361     |
| <i>Phaladomya</i> , Sowerby.....                                                               | 362     |
| <i>P. subelongata</i> , Meek, 1857, pl. ii, figs. 1 a.....                                     | 362     |
| <i>Goniomya</i> , Agassiz.....                                                                 | 362     |
| <i>G. borealis</i> , Meek, 1857, pl. ii, fig. 2.....                                           | 362-363 |
| <i>Thracia</i> , Leach.....                                                                    | 363     |
| <i>T. ? occidentalis</i> , Meek, 1857, pl. ii, figs. 3 a.....                                  | 363     |
| <i>T. ? subtruncata</i> , Meek, 1857, pl. ii, figs. 4 and 4 a.....                             | 363-364 |



|                                                                                         | Page.   |
|-----------------------------------------------------------------------------------------|---------|
| <i>Gastropoda.</i>                                                                      |         |
| <i>Dentalium</i> , Linnæus.....                                                         | 364     |
| <i>D. komookense</i> , Meek, 1857, pl. iii, fig. 6.....                                 | 364     |
| <i>Cephalopoda.</i>                                                                     |         |
| <i>Baculites</i> , Lamarek.....                                                         | 364     |
| <i>B. chicoensis</i> , Trask? 1856, pl. iv, figs. 2 <i>a-c</i> .....                    | 364-365 |
| <i>B. occidentalis</i> , Meek, 1861, pl. iv, figs. 1 <i>a-b</i> .....                   | 366-367 |
| <i>Heteroceras</i> , d'Orbigny.....                                                     | 367     |
| <i>H. cooperi</i> , Gabb sp., 1864, pl. iii, figs. 7 <i>a</i> .....                     | 367     |
| <i>Ammonites</i> , Bruguière.....                                                       | 367     |
| <i>A. newberryanus</i> , Meek, 1857, pl. iv, figs. 3 <i>a, b</i> .....                  | 367-368 |
| <i>A. complexus</i> var. <i>suciansis</i> , Meek, 1861, pl. v, figs. 2 <i>a-c</i> ..... | 369-370 |
| <i>Placentoceras</i> , Meek.....                                                        | 370     |
| <i>P. ? vancouverense</i> , Meek, 1861, pl. vi, figs. 1 <i>a-c</i> .....                | 370-371 |
| <i>Phylloceras</i> , Suess.....                                                         | 371     |
| <i>P. ? ramosus</i> , Meek, 1857, pl. v, figs. 1 <i>a-b</i> ,.....                      | 371-373 |
| <i>Nautilus</i> , Linnæus.....                                                          | 373     |
| <i>N. campbelli</i> , Meek, 1861, pl. vi, figs. 2, 2 <i>a</i> .....                     | 373     |

TERTIARY SPECIES. †

|                                                                  |     |
|------------------------------------------------------------------|-----|
| <i>Mactra</i> , Linnæus.....                                     | 374 |
| <i>M. gibbana</i> , Meek, 1861, pl. ii, figs. 8 <i>a-b</i> ..... | 374 |

102.

k, F. B. Note on the new genus *Uintaerinus*, Grinnell. <Bulletin U. S. Geol. and Geog. Surv. of the Terr., vol. ii, No. 4, pp. 375-378, 2 wood cuts. 1876. Washington, 1876.

This paper consists largely of a redescription and rectification of the genus.

|                                                                       | Page.   |
|-----------------------------------------------------------------------|---------|
| <i>Uintaerinus</i> , n. g., Grinnell, 1876.....                       | 375-378 |
| <i>U. socialis</i> , n. s., Grinnell, 1876 †, figs. A, B, p. 375..... | 375     |

103.

c, F. B. Descriptions of the Cretaceous Fossils collected on the San Juan exploring expedition under Capt. J. N. Macomb, U. S. Engineers. <Report of the Exploring Expedition from Santa Fé, New Mexico, to the junction of the Grand and Green rivers of the Great Colorado of the West, in 1859, pp. 121-133, pls. i and ii. Washington, 1876.

The exploration was made in 1859, but the report was not published until 1876, when Mr. Meek revised the work in accordance with his views at the time of publication.

|                                                                                     |         |
|-------------------------------------------------------------------------------------|---------|
| <i>Lamellibranchiata.</i>                                                           | Page.   |
| <i>Ostrea</i> , Linnæus.....                                                        | 123     |
| <i>O. lugubris</i> , Conrad, 1857, pl. i, figs. 1 <i>a-d</i> .....                  | 123-124 |
| <i>O. (Gryphæa?) uniformis</i> , n. s., Meek, 1876, pl. i, figs. 2 <i>a-c</i> ..... | 124     |
| <i>Exogyra</i> , Say.....                                                           | 124     |
| <i>E. columbella</i> , n. s., Meek, 1876, pl. i, figs. 3 <i>a-d</i> .....           | 124-125 |
| <i>Anomia</i> , Linnæus.....                                                        | 125     |
| <i>A. nitida</i> , n. s., Meek, 1876, pl. i, figs. 4 <i>a-b</i> .....               | 125     |
| <i>Caprotina</i> , d'Orbigny.....                                                   | 126     |
| <i>C. (Requienia?) bicornis</i> , Meek, 1876, pl. i, figs. 7 <i>a-b</i> .....       | 126     |
| <i>Plicatula</i> , Lamarek.....                                                     | 126     |
| <i>P. arenaria</i> , n. s., Meek, 1876, pl. i, figs. 5 <i>a-c</i> .....             | 126-127 |
| <i>Inoceramus</i> , Sowerby.....                                                    | 127     |
| <i>I. fragilis</i> , H. & M., 1856 †, pl. i, fig. 6.....                            | 127     |
| <i>Crassatella</i> , Lamarek.....                                                   | 127     |
| <i>C. shumardi</i> , n. s., Meek, 1876, pl. ii, figs. 7 <i>a-c</i> .....            | 127-128 |
| <i>Cyprenmeria</i> , Conrad.....                                                    | 128     |
| <i>C. ? crassa</i> , n. s., Meek, 1876, pl. i, figs. 8 <i>a-d</i> .....             | 128     |
| <i>Cardium</i> , Linnæus.....                                                       | 128     |
| <i>C. bellulum</i> , n. s., Meek, 1876, pl. ii, figs. 6 <i>a, b</i> .....           | 128-129 |

|                                                                               | Page.   |
|-------------------------------------------------------------------------------|---------|
| <i>Gastropoda.</i>                                                            |         |
| <i>Actæon</i> , Montfort .....                                                | 129     |
| <i>A. interocularis</i> , n. s., Meek, 1876, pl. ii, figs. 4 a-c .....        | 129     |
| <i>Anchura</i> , Conrad .....                                                 | 129     |
| <i>A. ? newberryi</i> , n. s., Meek, 1876, pl. ii, fig. 5 .....               | 129-130 |
| <i>Cephalopoda.</i>                                                           |         |
| <i>Baculites</i> , Lamarck .....                                              | 130     |
| <i>B. anceps</i> var. <i>obtusius</i> , Meek, 1876, pl. ii, figs. 1 a-h ..... | 130-132 |
| <i>Prionocyclus</i> , Meek .....                                              | 132     |
| <i>P. ? macombi</i> , n. s., Meek, 1876, pl. ii, figs. 3 a-d .....            | 132-133 |

## 104.

MEEK, F. B. Report on the Paleontological collections of the expedition, <Report Expl. Great Basin of the Terr. of Utah, in 1859. By J. H. Simpson. Appendix J, pp. 337-373, pls. i-v. Washington, 1876.

Devonian, Carboniferous, Jurassic, Cretaceous, and Tertiary. The explanations were made and the fossils collected nearly eighteen years before the publication of this report, but the paleontology was corrected in accordance with the views of the author at the time of publication.

## Descriptions of new species.

## DEVONIAN FOSSILS.

|                                                                     |         |
|---------------------------------------------------------------------|---------|
| <i>Mollusca.</i>                                                    |         |
| <i>Brachiopoda.</i>                                                 | Page.   |
| <i>Productus</i> , Sowerby .....                                    | 343     |
| <i>P. subaculeatus</i> , Murchison ? 1840, pl. i, figs. 3 a-c ..... | 345     |
| <i>Spirifer</i> , Sowerby .....                                     | 345     |
| <i>S. utahensis</i> , Meek, 1860, pl. i, figs. 4 a-c .....          | 345-346 |
| <i>S. engelmanni</i> , Meek, 1860, pl. i, figs. 1 a-c .....         | 346-347 |
| <i>S. strigosus</i> , Meek, 1860, pl. i, figs. 5 a-d .....          | 347     |
| <i>Atrypa</i> , Dalman .....                                        | 347     |
| <i>A. reticularis</i> (Lin.) Dalm., 1767, pl. i, figs. 6 a-b .....  | 347-348 |
| <i>A. aspera</i> , Schloth, 1813, pl. i, figs. 2 a-b .....          | 348     |

## CARBONIFEROUS FOSSILS.

|                                                                                       |         |
|---------------------------------------------------------------------------------------|---------|
| <i>Mollusca.</i>                                                                      |         |
| <i>Polyzoa.</i>                                                                       |         |
| <i>Archimediopora</i> , D'Orbigny .....                                               | 349     |
| <i>Archimediopora</i> , — ? Meek, pl. i, fig. 11 .....                                | 349     |
| <i>Brachiopoda.</i>                                                                   |         |
| <i>Chonetes</i> , Fischer .....                                                       | 349     |
| <i>C. verneuilliana</i> var. <i>utahensis</i> , Meek, 1876, pl. ii, figs. 2 a-c ..... | 349-350 |
| <i>Productus</i> , Sowerby .....                                                      | 349     |
| <i>P. semistriatus</i> , Meek, 1860, pl. i, figs. 7 a-b .....                         | 349     |
| <i>P. multistriatus</i> , Meek, 1860, pl. i, figs. 8 a-b .....                        | 350     |
| <i>Athyris</i> , McCoy .....                                                          | 350     |
| <i>A. subtilita</i> , Hall, sp., 1852, pl. ii, figs. 4 a-b .....                      | 350-351 |
| <i>Spirifer</i> , Sowerby .....                                                       | 351     |
| <i>S. (Spiriferina ?) scobina</i> , Meek, 1860, pl. ii, figs. 5 a-c .....             | 351-352 |
| <i>S. (Spiriferina) pulcher</i> , Meek, 1860, pl. ii, figs. 1 a-h .....               | 352     |
| <i>S. cameratus</i> , Morton, 1836, pl. ii, figs. 3 a, b .....                        | 353     |
| <i>Lamellibranchiata.</i>                                                             |         |
| <i>Aviculopecten</i> , McCoy .....                                                    | 354     |
| <i>A. utahensis</i> , Meek, 1860, pl. i, figs. 9 a-c .....                            | 354     |
| <i>Cephalopoda.</i>                                                                   |         |
| <i>Orthoceras</i> , Auct. ....                                                        | 354     |
| <i>O. baculum</i> , Meek, 1860, pl. i, figs. 10 a-b .....                             | 354-355 |

## JURASSIC SPECIES.

|                                                                    |     |
|--------------------------------------------------------------------|-----|
| <i>Radiata.</i>                                                    |     |
| <i>Echinodermata.</i>                                              |     |
| <i>Pentacrinites</i> , Miller .....                                | 355 |
| <i>Pentacrinites</i> , undt. sp., Meek, pl. iii, figs. 5 a-c ..... | 355 |
| <i>Mollusca.</i>                                                   |     |
| <i>Lamellibranchiata.</i>                                          |     |
| <i>Ostrea</i> , Linnæus .....                                      | 355 |



|                                                                                    | Page.   |
|------------------------------------------------------------------------------------|---------|
| <i>O. engelmanni</i> , Meek, 1860, pl. iii, fig. 6 .....                           | 355-356 |
| <i>Gryphaea calceola</i> , Quenstedt† 1856, pl. iii, fig. 2 .....                  | 356     |
| <i>Camptonectes</i> , Agassiz .....                                                | 356     |
| <i>C. bellistriata</i> , Meek, 1860, pl. iii, figs. 3 a-d .....                    | 356-357 |
| <i>Gasteropoda</i> .                                                               |         |
| <i>Dentalium</i> , Linn .....                                                      | 357     |
| <i>D. † subquadratum</i> , Meek, 1860, pl. iii, figs. 1 a-c .....                  | 357     |
| <i>Cephalopoda</i> .                                                               |         |
| <i>Belemnites</i> , Lamarck .....                                                  | 358     |
| <i>B. densus</i> , M. & H., 1858, pl. iii, figs. 4 a, b .....                      | 358     |
| CRETACEOUS FOSSILS.                                                                |         |
| <i>Lamellibranchiata</i> .                                                         |         |
| <i>Inoceramus</i> , Sowerby .....                                                  | 358     |
| <i>I. problematicus</i> , Schloth., 1820, pl. iv, figs. 1 a and 1 b, c (f) .....   | 358-359 |
| <i>Anomia</i> , Linn .....                                                         | 359     |
| <i>A. concentrica</i> , Meek, 1860, pl. iv, fig. 3 .....                           | 359     |
| <i>Inoceramus simpsoni</i> , Meek, 1860, pl. iv, fig. 4 .....                      | 360     |
| BEAR RIVER FRESH-WATER OR ESTUARY BEDS.                                            |         |
| <i>Mollusca</i> .                                                                  |         |
| <i>Lamellibranchiata</i> .                                                         |         |
| <i>Unio</i> , Retzius .....                                                        | 361     |
| <i>U. vetustus</i> , Meek, 1860, pl. v, figs. 12 a, b .....                        | 361     |
| <i>Corbula</i> , Bruguière .....                                                   | 361     |
| <i>C. (Anisorhynchus) pyriformis</i> , Meek, 1860, pl. v, figs. 9 and 10 .....     | 361-362 |
| <i>C. engelmanni</i> , Meek, 1860, pl. v, figs. 13 a, b .....                      | 362     |
| <i>Gasteropoda</i> .                                                               |         |
| <i>Pyrgulifera</i> , 1871, Meek .....                                              | 363     |
| <i>P. humerosa</i> , Meek, 1860, pl. v, figs. 6 a-c .....                          | 363     |
| <i>Limnæa nitidula</i> , Meek, 1860, pl. v, fig. 14 .....                          | 363-364 |
| <i>Rhytrophorus</i> .....                                                          | 364     |
| <i>R. priscus</i> , Meek, 1860, pl. v, figs. 4 a, b .....                          | 364     |
| TERTIARY FOSSILS.                                                                  |         |
| <i>Mollusca</i> .                                                                  |         |
| <i>Lamellibranchiata</i> .                                                         |         |
| <i>Unio</i> , Retzius .....                                                        | 364     |
| <i>U. haydeni</i> , Meek, 1860, pl. v, figs. 11 a, b .....                         | 364-365 |
| <i>Goniobasis</i> , Lea .....                                                      | 365     |
| <i>G. simpsoni</i> , Meek, 1860, pl. v, figs. 1 a-e .....                          | 365-366 |
| <i>G. arcta</i> , Meek, 1860, pl. v, fig. 5 .....                                  | 366     |
| <i>Planorbis</i> , Müller .....                                                    | 366     |
| <i>P. spectabilis</i> , Meek, 1860, pl. v, figs. 7 a-d .....                       | 366-367 |
| <i>P. spectabilis</i> var. <i>utahensis</i> , Meek, 1860, pl. v, figs. 8 a-c ..... | 367     |
| <i>Limnæa vetusta</i> , Meek, 1860, pl. v, figs. 3 a, b .....                      | 367     |
| <i>L. similis</i> , Meek, 1860, pl. v, figs. 2 a, b .....                          | 367     |
| Catalogue of the organic remains contained in the collection .....                 | 368-373 |
| Devonian species .....                                                             | 368     |
| Carboniferous species .....                                                        | 368-371 |
| Permian forms .....                                                                | 371-372 |
| Jurassic species .....                                                             | 372     |
| Cretaceous species .....                                                           | 372-373 |
| Fossils of the Bear River Fresh or Brackish water beds .....                       | 373     |
| Tertiary species .....                                                             | 373     |

105.

MEEK, F. B. A report on the Invertebrate Cretaceous and Tertiary Fossils of the Upper Missouri Country. <Rep. U. S. Geol. & Geogr. Surv. of the Terr. 4°. vol. ix, pp. i-xiv, 1-629, pls. i-xlv. Washington, 1876.

This great work contains descriptions and illustrations of nearly 300 species; more than 200 genera and subgenera are fully diagnosed, besides which full diagnoses of the families which embrace them are given; also philosophical discussion of many important questions. The greater part of the species embraced in this volume were previously, from time to time, described and published, mainly in the publications of the Acad. Nat. Sc. Phila.

## CONTENTS.

|                                                                                                                                                         | Page.   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| List of wood-cuts .....                                                                                                                                 | xiii    |
| List of errata .....                                                                                                                                    | xv      |
| Letter of Dr. F. V. Hayden .....                                                                                                                        | xvii    |
| Introductory remarks .....                                                                                                                              | xix     |
| Cretaceous formation .....                                                                                                                              | xxi     |
| Section of Cretaceous formation on the Missouri .....                                                                                                   | xxiii   |
| General section of the Cretaceous rocks of Nebraska .....                                                                                               | xxiv    |
| Subdivisions of the Upper Missouri undoubted Cretaceous series, and their geographical extension west of the Mississippi, individually considered ..... | xxvi    |
| Dakota group .....                                                                                                                                      | xxvi    |
| Fort Benton group .....                                                                                                                                 | xxviii  |
| Niobrara group .....                                                                                                                                    | xxx     |
| Fort Pierre group .....                                                                                                                                 | xxxiii  |
| Fox Hills group .....                                                                                                                                   | xxxv    |
| New Mexican Cretaceous section .....                                                                                                                    | xxxvii  |
| Relations of the Upper Missouri Cretaceous beds to those east of the Mississippi .....                                                                  | xxxviii |
| Section of Cretaceous rocks of Mississippi .....                                                                                                        | xxxviii |
| Alabama section .....                                                                                                                                   | xxxix   |
| New Jersey section .....                                                                                                                                | xli     |
| Parallelism of the subdivisions of the Upper Missouri Cretaceous series with those of the same in Europe .....                                          | xliii   |
| Fresh and brackish water lignite deposits of the Upper Missouri .....                                                                                   | xlvi    |
| Judith River group .....                                                                                                                                | xlvi    |
| Section of the Judith River group .....                                                                                                                 | xlvi    |
| Fort Union group .....                                                                                                                                  | lv      |
| Section of the Fort Union .....                                                                                                                         | lx      |
| Tertiary rocks of the Wind River and White River groups .....                                                                                           | lxi     |
| Wind River group .....                                                                                                                                  | lxi     |
| White River group .....                                                                                                                                 | lxi     |
| Section of the White River group .....                                                                                                                  | lxii    |
| Invertebrate palaeontology .....                                                                                                                        | 1       |
| Cretaceous species .....                                                                                                                                | 1       |
| Species of the fresh and brackish water lignite beds .....                                                                                              | 500     |
| Fossils of the Wind River Tertiary .....                                                                                                                | 503     |
| Fossils of the White River Tertiary .....                                                                                                               | 506     |
| Appendix .....                                                                                                                                          | 607     |

## CRETACEOUS.

## Radiata.

## Polypi.

## Actinaria.

## Fungidae.

- Micrabacia*, Edwards & Haime, 1849..... 1  
*M. americana*, M. & H., 1860, pl. xxviii, figs. 1 a-d..... 1-2

## Alcyonaria.

## Gorgoniidae.

- Websteria*, Edwards & Haime, 1854..... 2-3  
*W. cretacea*, Meek, 1884, pl. xxviii, figs. 3 a-c..... 2-4  
*Microstizia*, n. g., Meek, 1876..... 4  
*M. millepunctata*, n. s., Meek, 1876, pl. xxviii, figs. 2 a-c..... 4

## Echinodermata.

## Echinoidea.

## Spatangidae.

- Hemiaster*, Desor., 1847..... 5  
*H. humphreysanus*, M. & H., 1857, pl. x, figs. 1 a-g..... 5-6

## Mollusca.

## Brachiopoda.

## Lyopomata.

## Lingulidae.

- Lingula*, Brugnière, 1792..... 7-9  
*L. nitida*, M. & H., 1861, pl. xxviii, figs. 18 a, b..... 8-10

*Lamellibranchiata.*

*Monomyaria.*

*Ostreidae.*

|                                                                                                                       |       |
|-----------------------------------------------------------------------------------------------------------------------|-------|
| <i>Ostrea</i> , Linnæus, 1758 .....                                                                                   | 10-12 |
| <i>Alectryonia</i> , Fischer .....                                                                                    | 11    |
| <i>Gryphæostrea</i> , Conrad .....                                                                                    | 11    |
| <i>Ostrea</i> , sp. undt., pl. ii, figs. viii a and b .....                                                           | 12-13 |
| <i>O. congesta</i> , Conrad, 1843, pl. ix, figs. 1 a-f .....                                                          | 13-14 |
| <i>O. inornata</i> , M. & H., 1860, pl. x, fig. 4 .....                                                               | 14    |
| <i>O. pellucida</i> , M. & H., 1860, pl. xxviii, figs. 4 a and b .....                                                | 15    |
| <i>O. (Gryphæostrea?) scalata</i> , Meek, pl. xxviii, fig. 5 .....                                                    | 15-16 |
| <i>O. (Gryphæa?) patina</i> , M. & H., 1856, pl. x, figs. 2 a, b; a, b (bis), and 3 a, f; also pl. xi varieties ..... | 16-18 |
| <i>Gryphæa</i> , Lamarck, 1801 .....                                                                                  | 19    |
| <i>G. vesicularis</i> , Lam. ? 1806, pl. xi, figs. 2 a-c, and pl. xvi, figs. 8 a, b .....                             | 20-21 |

*Anomiidae.*

|                                                                        |       |
|------------------------------------------------------------------------|-------|
| <i>Anomia</i> , Linnæus, 1767 .....                                    | 21-22 |
| <i>A. ? obliqua</i> , M. & H., 1860, pl. ix, fig. 2 .....              | 22    |
| <i>A. ? subtrigonalis</i> , M. & H., 1860, pl. xvi, figs. 4 a, b ..... | 22-23 |

*Pectinidae.*

|                                                                    |       |
|--------------------------------------------------------------------|-------|
| <i>Chlamys</i> , Bolten, 1798 .....                                | 23-25 |
| <i>C. nebrascensis</i> , M. & H., 1856, pl. xvi, figs. 6 a-c ..... | 25-26 |
| <i>Syncyclonema</i> , Meek, 1864 .....                             | 26-27 |
| <i>S. rigida</i> , H. & M., 1854, pl. xvi, figs. 5 a, b .....      | 27-28 |

*Heteromyaria.*

*Pteridae.*

|                                                                                                                                 |       |
|---------------------------------------------------------------------------------------------------------------------------------|-------|
| <i>Pteria</i> , Scopoli, 1777 .....                                                                                             | 28-32 |
| <i>Electroma</i> , Stoliczka .....                                                                                              | 29    |
| <i>Pseudoptera</i> , Meek .....                                                                                                 | 29    |
| <i>Ozytoma</i> , Meek .....                                                                                                     | 29    |
| <i>P. linguiformis</i> , Evans & Shumard, sp., 1854, pl. xvi, figs. 1 a-d .....                                                 | 32-33 |
| <i>P. linguiformis</i> var. <i>subgibbosa</i> , pl. xxviii, fig. 12 .....                                                       | 33    |
| <i>P. haydeni</i> , H. & M., 1854, pl. xvi, figs. 2 a, b .....                                                                  | 33-34 |
| <i>P. (Ozytoma) nebrascana</i> , E. & S., 1857, pl. xvi, figs. 3 a, b, and pl. xxviii, fig. 11 ..                               | 34-36 |
| <i>P. (Pseudoptera) fibrosa</i> , M. & H., 1856, pl. xvii, figs. 17 a-d .....                                                   | 36-37 |
| <i>Inoceramus</i> , Sowerby, 1819 .....                                                                                         | 38-41 |
| Subgenus <i>Inoceramus</i> .....                                                                                                | 38-39 |
| <i>Mytiloides</i> , Brongniart .....                                                                                            | 39    |
| <i>Catillus</i> (Brongniart ?), Chenu .....                                                                                     | 39    |
| <i>Actinoceramus</i> , Meek .....                                                                                               | 39    |
| <i>Volciceramus</i> , Stoliczka .....                                                                                           | 40    |
| <i>I. (Inoceramus) fragilis</i> , H. & M., 1854, pl. v, fig. 5, and figs. 1 and 2, p. 42 .....                                  | 42-43 |
| <i>I. (Inoceramus) altus</i> , Meek, 1871, pl. xiv, figs. 1 a, b .....                                                          | 43-44 |
| <i>I. (Volciceramus) umbonatus</i> , M. & H., 1858, pl. iii, figs. 1 a-c, and pl. iv, figs. 1 a-b and 2 a, b .....              | 44-46 |
| <i>I. (Volciceramus) exogyroides</i> , M. & H., 1862, pl. v, figs. 3 a-c .....                                                  | 46-47 |
| Subgenus <i>Catillus</i> , Brong.                                                                                               |       |
| <i>I. (Catillus) pertenuis</i> , M. & H., 1856, pl. xxxvii, figs. 3 a, b, and pl. xxxviii, figs. 3 a, b .....                   | 47-48 |
| <i>I. (Catillus) crispus</i> ? var. <i>subcompressus</i> , M. & H., pl. xxxviii, fig. 2 bis .....                               | 48-49 |
| <i>I. (Catillus) crispus</i> ? var. <i>barabini</i> , Morton, 1834, pl. xlii, figs. 1 a-c, and pl. xli, fig. 3, figs. 1-4 ..... | 49-50 |
| <i>I. (Catillus) convexus</i> , H. & M., 1854, pl. xii, figs. 5 a and b .....                                                   | 51-52 |
| <i>I. (Catillus) sagensis</i> var. <i>nebrascensis</i> , Owen, 1852, pl. xlii, figs. 2 a, b .....                               | 52-53 |
| <i>I. (Catillus) proximus</i> , Tuomey ? 1854, pl. xii, figs. 7 a, b .....                                                      | 53-55 |
| <i>I. (Catillus) proximus</i> ? var. <i>subcircularis</i> , Meek, pl. xli, figs. 2 a, b .....                                   | 55-56 |
| <i>I. (Catillus) balchii</i> , M. & H., 1860, pl. xv, figs. 1 a, b .....                                                        | 56    |
| <i>I. (Catillus) tenuilineatus</i> , H. & M., 1854, pl. xii, fig. 6 .....                                                       | 57    |
| <i>I. (Catillus) vanuxemi</i> , M. & H., 1860, pl. xiv, figs. 2 a, b .....                                                      | 57-58 |
| <i>I. (Catillus) subæcis</i> , H. & M., 1854, pl. xli, figs. 1 a and b .....                                                    | 58-59 |
| <i>I. (Catillus) tenuirostris</i> , M. & H., 1862, fig. 5 .....                                                                 | 59    |
| <i>I. (Catillus) undabundus</i> , M. & H., 1862, pl. iii, figs. 2 a, b .....                                                    | 60-61 |
| <i>I. (Catillus) incurvatus</i> , M. & H., 1856, pl. xli, figs. 4 a and b .....                                                 | 61    |
| Subgenus <i>Mytiloides</i> , Brong.                                                                                             |       |
| <i>I. (Mytiloides) problematicus</i> , Schlot., pl. ix, figs. 3 a, b .....                                                      | 62    |

|                                                                                                       | Page.   |
|-------------------------------------------------------------------------------------------------------|---------|
| <i>I. (Mytiloides) problematicus</i> var. <i>aviculoides</i> , M. & H., 1860, pl. ix, fig. 4 .....    | 63-64   |
| <i>Gervillia</i> , DeFrance .....                                                                     |         |
| <i>G. subtorquosa</i> , M. & H., 1856, pl. xvi, figs. 7 a-c .....                                     | 65-66   |
| <i>G. recta</i> , M. & H., 1861, pl. xxix, figs. 1 a, b .....                                         | 66-67   |
| <b>Mytilidae.</b>                                                                                     |         |
| <i>Mytilus</i> , Linnæus, 1758 .....                                                                  | 67-68   |
| <i>Aulacomya</i> , Mörch (= <i>Hormomya</i> , Mörch) .....                                            | 68      |
| <i>Stavelia</i> , Gray .....                                                                          | 68      |
| <i>M. subarcuatus</i> , M. & H., 1856, pl. xxxviii, figs. 2 a, b .....                                | 69      |
| <i>Yoldella</i> , Scopoli, 1777 .....                                                                 | 69-71   |
| <i>Brachydontes</i> , Swainson .....                                                                  | 70      |
| <i>Y. meekii</i> , E. & S., sp., 1857, pl. xv, figs. 3 a-c .....                                      | 72      |
| <i>Y. galpiniana</i> , E. & S., sp., 1854, pl. xxviii, figs. 7 a, b .....                             | 73      |
| <i>Y. attenuata</i> , M. & H., 1856, pl. xxviii, figs. 8 a, b .....                                   | 74      |
| <i>Orenella</i> , Brown, 1827 .....                                                                   | 74-75   |
| <i>Modiolaria</i> , Beck .....                                                                        | 75      |
| <i>O. elegantula</i> , M. & H., 1861, pl. xxviii, figs. 6 a-c .....                                   | 75-76   |
| <b>Dimyaria.</b>                                                                                      |         |
| <b>Aroidæ.</b>                                                                                        |         |
| <i>Barbatia</i> , Gray, 1840 .....                                                                    | 76-80   |
| <i>Polynema</i> , Conrad .....                                                                        | 78      |
| <i>Acor</i> , Gray .....                                                                              | 78      |
| <i>Oalioarea</i> , Gray .....                                                                         | 78      |
| <i>Striarea</i> , Conrad .....                                                                        | 78      |
| <i>Plagiarea</i> , Conrad .....                                                                       | 78      |
| <i>Iranoarea</i> , Conrad (= <i>Oucilloarea</i> , Conrad) .....                                       | 78      |
| <i>B. (Polynema ?) parallela</i> , Meek, 1872, pl. ii, fig. 10 .....                                  | 80-81   |
| <i>Nemodon</i> , Conrad, 1870 .....                                                                   | 81-82   |
| <i>N. sulcatinus</i> , Evans & Shum., sp., 1857, pl. xv, figs. 6 a, b .....                           | 82-83   |
| <i>Oucilloa</i> , Lamarck, 1801 .....                                                                 | 83-85   |
| <i>Idonearca</i> , Conrad .....                                                                       | 84      |
| <i>Latiarea</i> , Conrad .....                                                                        | 84      |
| <i>O. (Idonearca) shumardi</i> , M. & H., 1856, pl. xxviii, figs. 15, a-g, and pl. xxix, fig. 4 ..... | 86-87   |
| <i>O. (Idonearca) nebrascensis</i> , Owen, 1852, pl. xxix, figs. 5 a, b .....                         | 88-89   |
| <i>O. (Idonearca ?) cordata</i> , M. & H., 1856, pl. xxix, figs. 6 a, b .....                         | 89-90   |
| <i>Trigonarea</i> , Conrad, 1862 .....                                                                | 90-91   |
| <i>Breviarea</i> , Conrad .....                                                                       | 91      |
| <i>T. (Breviarea ?) siouzensis</i> , H. & M., 1854, pl. i, fig. 6 .....                               | 92      |
| <i>T. (Breviarea ?) salinensis</i> , Meek, pl. ii, figs. 1 a-c .....                                  | 92-98   |
| <i>T. (Breviarea) exigua</i> , M. & H., 1856, pl. xv, figs. 2 a-f .....                               | 93-94   |
| <i>Azinura</i> , Poli, 1791 .....                                                                     | 94-95   |
| <i>A. subimbricata</i> , M. & H., 1860, pl. xxviii, figs. 14 a-c .....                                | 95-96   |
| <i>Limopsis</i> , Sassi, 1827 .....                                                                   | 96      |
| <i>L. parvula</i> , M. & H., 1856, pl. xxviii, figs. 17 a-c .....                                     | 97-98   |
| <b>Nuculidæ.</b>                                                                                      |         |
| <i>Nucula</i> , Lamarck, 1799 .....                                                                   | 98-99   |
| <i>Acula</i> , H. & A., Ad .....                                                                      | 98      |
| <i>N. vulgata</i> , M. & H., 1856, pl. xvii, figs. 7 a, b .....                                       | 99-100  |
| <i>N. obsoletistriata</i> , M. & H., 1856, pl. xv, figs. 10 a, b .....                                | 100-101 |
| <i>N. planimarginata</i> , M. & H., 1856, pl. xv, figs. 8 a, b, and pl. xxviii, fig. 16 .....         | 101-102 |
| <i>N. cancellata</i> , M. & H., 1856, pl. xxviii, figs. 13 a-c .....                                  | 102-103 |
| <b>Laculæ.</b>                                                                                        |         |
| <i>Nuculana</i> , Link, 1807 .....                                                                    | 103-104 |
| <i>N. laevigata</i> , M. & H., 1864, pl. xv, figs. 4 a, b .....                                       | 104-105 |
| <i>N. subnucula</i> , H. & M., 1854, pl. xv, fig. 9 .....                                             | 105-106 |
| <i>N. equilateralis</i> , M. & H., 1856, pl. xv, figs. 7 a, b .....                                   | 106     |
| <i>Yoldia</i> , Müller, 1842 .....                                                                    | 107-108 |
| <i>Portlandia</i> , Mörch .....                                                                       |         |
| <i>Y. microdonta</i> , Meek, 1872, pl. ii, fig. 2 .....                                               | 109     |
| <i>Y. acicula</i> , M. & H., 1856, pl. xxviii, fig. 9 .....                                           | 110     |
| <i>Y. acuta</i> , M. & H., 1856, pl. xxviii, figs. 10 a-c .....                                       | 111     |
| <i>Y. ventricosa</i> , H. & M., 1854, pl. xv, figs. 5 a, b .....                                      | 112     |
| <b>Unioidea.</b>                                                                                      |         |
| <i>Margaritana</i> , Schumacher, 1817 .....                                                           | 113-114 |
| <i>Alamandula</i> , Say .....                                                                         | 113     |



|                                                                                                           | Page.   |
|-----------------------------------------------------------------------------------------------------------|---------|
| <i>Complanaria</i> , Swainson .....                                                                       | 113     |
| <i>Unionopsis</i> , Swainson (= <i>Calceola</i> , Swainson, 1840; not Lam., 1799) .....                   | 113     |
| <i>M. nebrascensis</i> , Meek, 1871, pl. i, figs. 5 a-c .....                                             | 114-115 |
| <i>Crassatellida</i> .....                                                                                |         |
| <i>Crassatella</i> , Lamarck, 1801 .....                                                                  | 115-117 |
| Subgenus <i>Pachythærus</i> , Conrad, 1870 .....                                                          | 116     |
| <i>C. (Pachythærus) evansi</i> , H. & M., 1854, pl. xvii, figs. 6 a-d .....                               | 117-118 |
| <i>Crassatellina</i> , Meek, 1871 .....                                                                   | 118-120 |
| <i>C. oblonga</i> , Meek, 1871, pl. ii, figs. 3 a-c .....                                                 | 120-121 |
| <i>Eriphyla</i> , Gabb, 1864 .....                                                                        | 121-124 |
| <i>E. gregaria</i> , M. & H., 1856, pl. xvii, figs. 9 a, b, figs. 6 and 7, p. 124 .....                   | 124-126 |
| <i>Solemyida</i> .....                                                                                    |         |
| <i>Solemya</i> , Lamarck, 1818 .....                                                                      | 126-129 |
| <i>S. subplicata</i> , M. & H., 1856, pl. xxviii, fig. 19 .....                                           | 129     |
| <i>Lucinida</i> .....                                                                                     |         |
| <i>Lucina</i> , Bruguière, 1792 .....                                                                     | 180-133 |
| <i>Myrtea</i> , Turton, 1822 .....                                                                        | 180     |
| <i>Ocydas</i> , H. & A. Adams, 1857 (not Brug.) .....                                                     | 131     |
| <i>Milthea</i> , H. & A. Adams, 1857 .....                                                                | 131     |
| <i>L. subundata</i> , Hall & Meek, 1854, pl. xvii, figs. 2 a-c .....                                      | 133-134 |
| <i>L. occidentalis</i> , Morton, 1842, pl. xvii, figs. 4 a-d .....                                        | 134-135 |
| <i>L. occidentalis</i> var. <i>ventricosa</i> , M. & H., 1860, pl. xvii, figs. 3 a-c .....                | 135-136 |
| <i>Sphaeriola</i> , Stoliczka, 1871 .....                                                                 | 136-137 |
| <i>S. ? cordata</i> , M. & H., 1857, pl. xxix, figs. 3 a-c .....                                          | 137-138 |
| <i>S. ? warreniana</i> , Meek .....                                                                       | 138     |
| <i>S. ? endotrachys</i> , Meek, pl. xxix, fig. 2 .....                                                    | 139     |
| <i>Tancredida</i> .....                                                                                   |         |
| <i>Tancredia</i> , Lycett, 1850 .....                                                                     | 140-142 |
| <i>T. americana</i> , M. & H., 1856, pl. xxxviii, figs. 1 a-h .....                                       | 142-144 |
| <i>Glossida</i> .....                                                                                     |         |
| <i>Cyprina</i> , Lamarck, 1812 .....                                                                      | 144-146 |
| <i>C. ovata</i> , M. & H., 1857, pl. xxix, figs. 7 a-c, and fig. 8, p. 146 .....                          | 146-147 |
| <i>C. ovata</i> var. <i>compressa</i> , M. & H., pl. xxx, fig. 11 .....                                   | 147     |
| <i>Veniella</i> , Stoliczka, 1870 (= <i>Venilia</i> , Morton; not of Duponchel, or Alder & Hancock) ..... | 147-152 |
| <i>Veniliocardia</i> , Stoliczka, 1870 .....                                                              | 149     |
| <i>V. conradi</i> , Morton, figs. 9-11 .....                                                              | 148     |
| <i>V. goniophora</i> , n. s., Meek, 1876, pl. iv, fig. 4 and fig. 12, p. 152 .....                        | 152-153 |
| <i>V. mortoni</i> , M. & H., 1862, pl. iv, figs. 3 a, b .....                                             | 154     |
| <i>V. subtumida</i> , M. & H., 1857, pl. xvii, figs. 5 a, b .....                                         | 154-156 |
| <i>V. (Veniliocardia ?) humilis</i> , M. & H., 1860, pl. xxx, figs. 5 a-c .....                           | 155-156 |
| <i>Oyrenida</i> .....                                                                                     |         |
| <i>Oyrena</i> , Lamarck, 1818 .....                                                                       | 157-158 |
| <i>Egeta</i> , H. & A. Adams, 1858 .....                                                                  | 157     |
| <i>Oyrena dakotensis</i> , M. & H., pl. i, figs. 1 a-f .....                                              | 159-160 |
| <i>Oorbicula</i> , Mühlfeldt, 1811 .....                                                                  | 160-163 |
| <i>Veloritina</i> , Meek .....                                                                            | 161     |
| <i>Leptesthes</i> , Meek .....                                                                            | 161     |
| <i>O. ? nucalis</i> , Meek, 1872, pl. ii, figs. 5 a, c .....                                              | 163-164 |
| <i>O. ? subtrigonalis</i> , Meek, 1872, pl. ii, fig. 6 .....                                              | 164-165 |
| <i>Cardiida</i> .....                                                                                     |         |
| <i>Cardium</i> , Linnaeus, 1758 (= <i>Acanthocardium</i> , Gray) .....                                    | 165-168 |
| <i>Pectunculus</i> (Adanson), Stoliczka; but not H. & A. Adams and others .....                           | 166     |
| <i>Trachycardium</i> , Mörch .....                                                                        | 166     |
| <i>Oriocardium</i> , Conrad .....                                                                         | 166     |
| <i>Tropidocardium</i> , Roemer ( <i>Cardium</i> proper of most authors) .....                             | 166     |
| <i>Cerastoderma</i> (Poli), Mörch .....                                                                   | 166     |
| <i>Nemocardium</i> , Meek .....                                                                           | 167     |
| <i>C. (Oriocardium) speciosum</i> , M. & H., 1856, pl. xxxvii, figs. 4 a-c .....                          | 169-170 |
| <i>C. kanasense</i> , Meek, 1871, pl. ii, figs. 14 a-d .....                                              | 170-171 |
| <i>Protocardia</i> , Beyrich, 1845 .....                                                                  | 171     |
| <i>Pachycardium</i> , Conrad .....                                                                        | 172     |
| <i>Leptocardia</i> , Meek .....                                                                           | 172     |
| Subgenus, <i>Protocardia</i> .....                                                                        | 172     |
| <i>P. (Protocardia) salinaensis</i> , Meek, 1871, pl. ii, figs. 13 a-c .....                              | 174     |

|                                                                                                                                 | Page.   |
|---------------------------------------------------------------------------------------------------------------------------------|---------|
| Subgenus, <i>Leptocardia</i> , Meek, Section (a) .....                                                                          | 175     |
| <i>P. (Leptocardia) subquadrata</i> , E. & S., sp., 1857, pl. xxix, figs. 8 a-c .....                                           | 175     |
| <i>P. (Leptocardia) rara</i> , E. & S. sp., 1857, pl. xvii, figs. 1 a-c .....                                                   | 176     |
| <i>P. (Leptocardia) pertenuis</i> , M. & H., 1861, figs. 13 and 14, p. 176 .....                                                | 176-177 |
| <b>Veneridae.</b>                                                                                                               |         |
| <i>Callista</i> , Poli, 1781 .....                                                                                              | 177     |
| <i>Callista</i> , Poli, typical (= <i>Ohione</i> Gray; not of Mühlfeldt) .....                                                  | 178     |
| <i>Dione</i> , Gray .....                                                                                                       | 178     |
| <i>Macrocallista</i> , Meek .....                                                                                               | 179     |
| <i>Pitar</i> , Rödm. (= <i>Caryatis</i> , Roemer) .....                                                                         | 179     |
| <i>Aphrodina</i> , Conrad .....                                                                                                 | 179     |
| <i>Dosiniopsis</i> , Conrad .....                                                                                               | 179     |
| <i>O. (Dosiniopsis) deveyi</i> , M. & H., 1856, pl. xvii, figs. 15 a-c .....                                                    | 182-183 |
| <i>O. (Dosiniopsis) oregonana</i> , M. & H., 1856, pl. xxxvii, fig. 1 .....                                                     | 183-184 |
| <i>O. (Dosiniopsis) nebrascensis</i> , M. & H., 1856, figs. 15-17, p. 184 .....                                                 | 184-186 |
| <i>O. (Dosiniopsis) orbiculata</i> , H. & M., 1854, pl. v, figs. 2 a-c .....                                                    | 186-187 |
| <i>O. ? pellucida</i> , M. & H., 1856, pl. xvii, figs. 10 a-c and figs. 12 a-c .....                                            | 187-188 |
| <i>O. (Aphrodina) ? tenuis</i> , H. & M., pl. v, figs. 1 a-d .....                                                              | 188-189 |
| <i>Thetis</i> , Sowerby, 1826 .....                                                                                             | 189-190 |
| <i>T. ? circularis</i> , M. & H., 1856, pl. xvii, figs. 8 a-c and figs. 18, 19, p. 190 .....                                    | 190-191 |
| <b>Tellinidae.</b>                                                                                                              |         |
| <i>Tellina</i> , Linnæus, 1758 .....                                                                                            | 192-193 |
| <i>Tellinella</i> , Gray .....                                                                                                  | 193     |
| <i>Peronodermia</i> (Poli), Mörch .....                                                                                         | 193     |
| <i>Mera</i> , H. & A. Adams (= <i>Donacilla</i> , Gray; not Lam) .....                                                          | 193     |
| <i>Palæomera</i> , Stoliczka .....                                                                                              | 193     |
| <i>Phylloda</i> , Schumacher .....                                                                                              | 193     |
| <i>Angulus</i> , Schumacher (= <i>Tellinula</i> , Chem., <i>Fabulina</i> , Gray) .....                                          | 193     |
| <i>Tellinides</i> , Lam .....                                                                                                   | 193     |
| <i>Hemalina</i> , Stoliczka .....                                                                                               | 194     |
| <i>Peronca</i> , Poli (= <i>Omala</i> , Schum., corrected <i>Hemala</i> , by Agassiz; also <i>Homala</i> , H. & A. Adams) ..... | 194     |
| <i>Metis</i> , H. & A. Adams .....                                                                                              | 194-195 |
| <i>T. (Pene) subcutila</i> , Meek, 1871, pl. ii, figs. 11 a and b .....                                                         | 195-196 |
| <i>T. (Peronca) ? equilateral</i> s. M. & H., 1856, pl. xxxix, figs. 5 a-c .....                                                | 196-197 |
| <i>T. (Peronca) ? scitula</i> , M. & H., 1856, pl. xxx, figs. 1 a, b .....                                                      | 197-198 |
| <i>Anacaria</i> , Conrad, 1860 .....                                                                                            | 198-199 |
| <i>I. ? formosa</i> , M. & H., 1860, pl. xxx, fig. 2 .....                                                                      | 199-200 |
| <i>Acropagella</i> , Meek, 1871 .....                                                                                           | 200-202 |
| <i>A. maetroidea</i> , Meek, 1871, pl. ii, figs. 4 a-d .....                                                                    | 202     |
| <i>A. ? macrodonta</i> , n. s., Meek, 1870, pl. i, fig. 2 .....                                                                 | 202-203 |
| <b>Mastridae.</b>                                                                                                               |         |
| <i>Mactra</i> , Linnæus, 1767 .....                                                                                             | 203-204 |
| <i>Mactra</i> Linn. (typical = <i>Trigonella</i> , da Costa) .....                                                              | 204     |
| <i>Cymbophora</i> , Gubb .....                                                                                                  | 204     |
| <i>Archizodesma</i> , Gray .....                                                                                                | 204-206 |
| <i>Mactra (Cymbophora) ? siouxensis</i> , M. & H., 1860, pl. i, figs. 7 a-c .....                                               | 206     |
| <i>M. (Cymbophora) ? formosa</i> , M. & H., 1856, pl. xxxix, fig. 7 .....                                                       | 207     |
| <i>M. (Cymbophora) ? warrenana</i> , M. & H., 1856, pl. xxx, figs. 7 a-d .....                                                  | 208     |
| <i>M. (Cymbophora) ? gracilis</i> , M. & H., 1860, pl. xvii, figs. 18 a, b .....                                                | 209     |
| <i>M. (Cymbophora) ? alta</i> , M. & H., 1856, pl. xxxvii, figs. 2 a, b .....                                                   | 210     |
| <i>M. (Cymbophora) ? nitidula</i> , M. & H., 1861, pl. xxx, figs. 6 a-c .....                                                   | 211-213 |
| <b>Choladomorphæ.</b>                                                                                                           |         |
| <i>Choladompa</i> , Sowerby, 1823 .....                                                                                         | 213-214 |
| <i>Pseudocardia</i> , Meek .....                                                                                                | 215-216 |
| <i>P. puppæra</i> , M. & H., 1862, pl. v, figs. 4 a, b .....                                                                    | 217     |
| <i>P. subcircularis</i> , M. & H., 1857, pl. xxxix, figs. 8 a, b .....                                                          | 217-218 |
| <i>Polygona</i> , <i>Pseudocardia</i> .....                                                                                     | 219     |
| <i>P. (Pseudocardia) holgii</i> , Meek, 1871, pl. xli, figs. 3 a, b .....                                                       | 219     |
| <i>Choladompa</i> , Agassiz, 1838 .....                                                                                         | 220-221 |
| <i>Ch. americana</i> , M. & H., 1856, pl. xxx, figs. 12 a, b .....                                                              | 121-122 |
| <b>Cardiidae.</b>                                                                                                               |         |
| <i>Cardia</i> , Leach, 1819 .....                                                                                               | 223-225 |
| <i>C. subcircularis</i> , M. & H., 1856, pl. xxxvii, fig. 5 .....                                                               | 223-224 |
| <i>C. spicata</i> , M. & H., 1857, pl. xxxix, figs. 6 a, b .....                                                                | 224-225 |

|                                                                                           | Pago.   |
|-------------------------------------------------------------------------------------------|---------|
| <i>T. i prouti</i> , M. & H., 1860, pl. xxxvii, figs. 6 a, b.....                         | 225-226 |
| <i>Liopietha</i> , Meek, 1864 .....                                                       | 227-236 |
| <i>Cymella</i> , Meek .....                                                               | 229     |
| <i>Prilomya</i> , Meek .....                                                              | 229     |
| <i>L. protexta</i> , Conrad, figs. 20-24 .....                                            | 227     |
| <i>Cymella bella</i> , Conrad, figs. 25-30 .....                                          | 228     |
| Subgenus <i>Cymella</i> , Meek .....                                                      | 236     |
| <i>Liopietha (Cymella) undata</i> , M. & H., 1856, pl. xxxix, figs. 1 a, b.....           | 236-237 |
| <i>Neaera</i> , Gray, 1834 .....                                                          | 237-238 |
| <i>N. ventricosa</i> , M. & H., 1856, pl. xxx, figs. 3 a-c.....                           | 238-239 |
| <i>N. moreauensis</i> , M. & H., 1856, pl. xvii, figs. 11 a-c.....                        | 239-240 |
| <b>Corbulidae.</b>                                                                        |         |
| <i>Corbula</i> , Bruguière, 1792 .....                                                    | 240-244 |
| <i>Anisorhynchus</i> , Conrad .....                                                       | 241     |
| <i>Pachyodon</i> (= <i>Pachydon</i> , Gabb. and <i>Anisothyris</i> , Conrad) .....        | 241     |
| <i>Corbula crassimarginata</i> , M. & H., 1860, pl. xvii, figs. 14 a-c.....               | 244-245 |
| <i>C. inornata</i> , M. & H., 1856, pl. xxx, figs. 4 a-d .....                            | 245-246 |
| <i>Corbulamella</i> , M. & H., 1857 .....                                                 | 246     |
| <i>C. gregaria</i> , M. & H., 1857, pl. xvii, figs. 13 a-d .....                          | 247     |
| <b>Saxicavidae.</b>                                                                       |         |
| <i>Glycimeris</i> , Lamarck, 1799 .....                                                   | 248-249 |
| <i>G. occidentalis</i> , M. & H., 1856, pl. xxxix, figs. 9 a, b.....                      | 250     |
| <b>Solenidae.</b>                                                                         |         |
| <i>Pharells</i> , Gray, 1854 .....                                                        | 250-251 |
| <i>P. i dakotensis</i> , M. & H., 1860, pl. i, fig. 3 .....                               | 251-252 |
| <i>Leptosolen</i> , Conrad, 1867 .....                                                    | 252-253 |
| <i>L. conradi</i> , Meek, 1872, pl. ii, figs. 12 a, b .....                               | 253-254 |
| <b>Pholadidae.</b>                                                                        |         |
| <i>Turnus</i> , Gabb, 1864 .....                                                          | 254-256 |
| <i>Gonioclasma</i> , Meek .....                                                           | 255     |
| <i>Xylophagella</i> , Meek .....                                                          | 255     |
| <i>T. (Gonioclasma) stimpsoni</i> , M. & H., 1857, pl. xxx, figs. 9 a, b .....            | 256-257 |
| <i>T. (Xylophagella) elegantulus</i> , M. & H., 1857, pl. xxx, figs. 10 a-c.....          | 257-258 |
| <i>Martensia</i> , Leach, 1824 .....                                                      | 258-259 |
| <i>M. cuneata</i> , M. & H., 1856, pl. xxx, figs. 8 a, b .....                            | 259-260 |
| <b>Teredidae.</b>                                                                         |         |
| <i>Teredo</i> , Linnæus, 1758 .....                                                       | 260-262 |
| <i>Calobates</i> , Gould .....                                                            | 261     |
| <i>T. sciliformis</i> , M. & H., 1860, pl. xvii, figs. 19 a-d .....                       | 262-263 |
| <i>T. globosa</i> , M. & H., 1856, pl. xxx, fig. 13 (burrows), figs. 31, 32, p. 264 ..... | 264-265 |
| <b>Gasteropoda.</b>                                                                       |         |
| <b>Solenocoencha.</b>                                                                     |         |
| <b>Dentaliidae.</b>                                                                       |         |
| <i>Dentalium</i> , Linn., 1758 .....                                                      | 266     |
| <i>D. gracile</i> , H. & M., 1854, pl. xviii, figs. 13 a-d.....                           | 266-267 |
| <i>Dentalis</i> , Sowerby, 1839 .....                                                     | 267-268 |
| <i>E. paupercula</i> , M. & H., 1863, pl. xviii, fig. 14 .....                            | 269     |
| <b>Teutibranchiata.</b>                                                                   |         |
| <b>Bullidae.</b>                                                                          |         |
| <i>Haminea</i> , Leach, 1847 .....                                                        | 270-271 |
| <i>H. occidentalis</i> , M. & H., 1856, pl. xviii, figs. 11 a, b, and 12 a, b .....       | 271-272 |
| <i>H. subcylindrica</i> , M. & H., 1856, pl. xviii, figs. 10 a, b .....                   | 272-273 |
| <i>H. minor</i> , M. & H., 1856, pl. xxxi, figs. 1 a, b .....                             | 273     |
| <b>Cylichnidae.</b>                                                                       |         |
| <i>Cylichna</i> , Lovén, 1846 .....                                                       | 274-275 |
| <i>Mnestia</i> , H. & A. Adams .....                                                      | 274     |
| <i>C. i volvaria</i> , M. & H., 1856, pl. xxxi, figs. 2 a, b .....                        | 275-276 |
| <i>C. scitula</i> , M. & H., 1860, pl. xxxi, figs. 3 a, b .....                           | 276-277 |
| <b>Actæonidae.</b>                                                                        |         |
| <i>Actæon</i> , Montfort, 1810 .....                                                      | 277-280 |
| <i>A. rubellipticus</i> , M. & H., 1856, pl. xix, fig. 16 .....                           | 280-281 |
| <i>A. attenuatus</i> , M. & H., 1858, pl. xix, figs. 17 a, b .....                        | 281-282 |
| <b>Ringiculidae.</b>                                                                      |         |
| <i>Ringulia</i> , Gray, 1840 .....                                                        | 282-283 |
| <i>Oligoptycha</i> , Meek .....                                                           | 283     |

|                                                                                                       | Page     |
|-------------------------------------------------------------------------------------------------------|----------|
| <i>Avellana</i> , d'Orbigny, 1843.....                                                                | 283      |
| <i>Oinulia</i> ( <i>Oligoptycha</i> ) <i>concinna</i> , H. & M., sp., 1854, pl. xxxi, 6 bis. a-c..... | 284      |
| <b>Pulmonata.</b>                                                                                     |          |
| <i>Siphonariidae</i> .                                                                                |          |
| <i>Anisomyon</i> , M. & H., 1860.....                                                                 | 285-288  |
| <i>A. borealis</i> , M. & H., 1860, pl. xviii, figs. 9 a-e.....                                       | 288-289  |
| <i>A. humardi</i> , M. & H., 1860, pl. xviii, figs. 7 a-c.....                                        | 289-290  |
| <i>A. patelliformis</i> , M. & H., 1860, pl. xviii, figs. 5 a-f (not d and e f).....                  | 290-291  |
| <i>A. suboratus</i> , M. & H., 1856, pl. xviii, figs. 5 d and 6.....                                  | 291-292  |
| <i>A. alveolus</i> , M. & H., 1860, pl. xviii, figs. 4 a, b.....                                      | 292      |
| <i>A. sexsulcatus</i> , M. & H., 1860, pl. xviii, figs. 8 a, b.....                                   | 293      |
| <i>Docoglossa</i> .                                                                                   |          |
| <i>Acmæidae</i> .                                                                                     |          |
| <i>Acmæa</i> , Esch.                                                                                  |          |
| <i>A. occidentalis</i> , M. & H., 1860, pl. xviii, figs. 3 a, b.....                                  | 295-296  |
| <i>A. ? parva</i> , M. & H., 1860, pl. xviii, figs. 1 a-c, and fig. 2.....                            | 296      |
| <i>A. ? papillata</i> , M. & H., 1860, pl. xxxi, figs. 4 a, b.....                                    | 296-297  |
| <i>Rhipidoglossa</i> .                                                                                |          |
| <i>Trochidae</i> .                                                                                    |          |
| <i>Margarita</i> , Leach, 1819.....                                                                   | 298      |
| <i>M. nebrascensis</i> , M. & H., 1860, pl. xix, figs. 8 a, b, 9 a, b.....                            | 298-299  |
| <i>M. mudgeana</i> , Meek, 1871, pl. ii, figs. 9 a, b.....                                            | 300      |
| <i>Margaritella</i> , M. & H., 1860.....                                                              | 300-302  |
| <i>M. flexistriata</i> , E. & S., 1854, pl. xix, figs. 11 a-d.....                                    | 302      |
| <i>Pectinibranchiata</i> .                                                                            |          |
| <i>Tritonidae</i> .                                                                                   |          |
| <i>Trachytriton</i> , Meek, 1864.....                                                                 | 303-304  |
| <i>T. vinculum</i> , H. & M., sp., 1856, pl. xix, figs. 7 a-d.....                                    | 304-306  |
| * <i>Olosteriscus</i> , n. g., Meek, 1876.....                                                        | 306-307  |
| <i>O. tenuiligneatus</i> , H. & M., sp., 1856, pl. xix, figs. 10 a, b, and 9 c.....                   | 306-308  |
| <i>Naticidae</i> .                                                                                    |          |
| <i>Gyrodes</i> , Conrad, 1860.....                                                                    | 308-310  |
| <i>G. conradi</i> , Meek, figs. 33-36, p. 310.....                                                    | 310-311  |
| <i>Lunatia</i> , Gray, 1847.....                                                                      | 311-314  |
| <i>L. concinna</i> , H. & M., sp., 1854, pl. xxxii, figs. 11 a-c.....                                 | 314-315  |
| <i>L. occidentalis</i> , M. & H., 1856, pl. xxxii, figs. 12 a-c.....                                  | 315-316  |
| <i>L. subrossa</i> , M. & H., 1856, pl. xxxix, figs. 3 a-c.....                                       | 316-317  |
| <i>Amauropis</i> , Mörch, 1857.....                                                                   | 317-318  |
| <i>A. paludineformis</i> , H. & M., sp., 1854, pl. xix, figs. 15 a-c.....                             | 318-319  |
| <i>Aporrhaidæ</i> .                                                                                   |          |
| <i>Aporrhais</i> , Dillwyn, 1823.....                                                                 | 320-322  |
| <i>Alipes</i> , Conrad, 1865 (= <i>Goniocheila</i> , Gabb).....                                       | 320      |
| <i>Arrhages</i> , Gabb, 1868.....                                                                     | 321      |
| <i>Aporrhais biangulata</i> , M. & H., 1856, pl. xix, figs. 6 a-c.....                                | 322-323  |
| <i>Anchura</i> , Conrad, 1860.....                                                                    | 324      |
| <i>Drepanochilus</i> , Meek, 1864 (= <i>Perissoptera</i> , Tate, in part).....                        | 324      |
| <i>A. (Drepanochilus) americana</i> , E. & S., sp., 1857, pl. xxxii, figs. 8 a, b.....                | 325-326  |
| <i>A. (Drepanochilus) nebrascensis</i> , E. & S., sp., 1854, pl. xix, figs. 5 a-c.....                | 326-327  |
| <i>A. ? sublevis</i> , M. & H., 1860, pl. xix, figs. 3 a, b.....                                      | 327-328  |
| <i>A. ? parva</i> , M. & H., 1860, pl. xix, figs. 4 a, b.....                                         | 328      |
| <i>Vanikoridae</i> .                                                                                  |          |
| <i>Vanikoro</i> , Quoy & Gaim. 1832.....                                                              | 329      |
| <i>V. ambigua</i> , M. & H., 1856, pl. xix, figs. 12 a-d.....                                         | 330, 331 |
| <i>Vanikoroopsis</i> ,† n. g., Meek, 1876.....                                                        | 331      |
| <i>V. tuomeyana</i> , M. & H., sp., 1856, pl. xxxix, figs. 2 a, b.....                                | 332      |
| <i>Turritellidae</i> .                                                                                |          |
| <i>Mesalia</i> , Gray, 1842.....                                                                      | 332-333  |
| <i>M. kansasensis</i> , Meek, 1871, pl. ii, figs. 7 a, b.....                                         | 332-334  |
| <i>Cerithiopsidae</i> .                                                                               |          |
| <i>Cerithiopsis</i> , Forbes & Hanley, 1849.....                                                      | 334-335  |
| <i>Alaba</i> , H. & A. Adams, 1853.....                                                               | 335      |
| <i>Seila</i> , A. Adams, 1861.....                                                                    | 335      |
| <i>Cerithiopsis moreauensis</i> , M. & H., 1856, pl. xxxi, fig. 4 (not 4 a, b), fig. 23, p. 336.....  | 336-337  |

\* κλωστήρ, a spindle (diminutive of).

† Vanikoro; ὄψις, form.



|                                                                                                                            | Page     |
|----------------------------------------------------------------------------------------------------------------------------|----------|
| <i>Pyramidellida.</i>                                                                                                      |          |
| <i>Ohemnitzia</i> , d'Orbigny, 1850.....                                                                                   | 337-339  |
| <i>O. cerithiformis</i> , M. & H., sp., 1856, pl. xxxii, figs. 10 a, b.....                                                | 339-341  |
| <i>Littorinida.</i>                                                                                                        |          |
| <i>Spironema</i> , Meek, 1864.....                                                                                         | 341-342  |
| <i>S. tenuilineata</i> , M. & H., sp., 1856, pl. xxxii, figs. 9 a-c.....                                                   | 342-343  |
| <i>Murioida.</i>                                                                                                           |          |
| <i>Pyrifusus</i> , Conrad, 1858.....                                                                                       | 343-345  |
| <i>Neptunella</i> , Meek, 1864 (not Gray).....                                                                             | 344      |
| <i>Pyrifusus</i> ( <i>Neptunella</i> ) <i>neoberryi</i> , M. & H., 1856, pl. xxxi, fig. 6 a-f, fig. 39, p. 346.....        | 346-347  |
| <i>P.</i> ( <i>Neptunella</i> ) <i>subturritus</i> , M. & H., sp., 1857, pl. xxxii, figs. 3 a, b, and fig. 40, p. 347..... | 347-348  |
| <i>P.</i> ( <i>Neptunella</i> ) <i>intertextus</i> , M. & H., sp., 1857, pl. xix, figs. 14 a, b.....                       | 348-349  |
| <i>Buccinida.</i>                                                                                                          |          |
| <i>Pseudobuccinum</i> , M. & H., 1856.....                                                                                 | 349-350  |
| <i>P. nebrascense</i> , M. & H., 1856, pl. xxxi, figs. 5 a-d.....                                                          | 350-351  |
| <i>Odontobasis</i> ,* n. g., Meek, 1876.....                                                                               | 351-352  |
| <i>O. constricta</i> , H. & M., sp., 1856, figs. 41, 42, p. 353.....                                                       | 352-354  |
| <i>Fasciariida.</i>                                                                                                        |          |
| <i>Fasciolaria</i> , Lamarck, 1799.....                                                                                    | 355-358  |
| <i>Terebrispira</i> , Conrad, 1862.....                                                                                    | 356      |
| <i>Piestochilus</i> , Meek, 1864.....                                                                                      | 356      |
| <i>Mesorhytis</i> , Meek.....                                                                                              | 356      |
| <i>Cryptorhytis</i> , Meek.....                                                                                            | 356      |
| <i>Fasciolaria buccinoides</i> , M. & H., 1856, pl. xxxi, figs. 8 a-d.....                                                 | 358-359  |
| <i>F.</i> ( <i>Piestochilus</i> ) <i>scarboroughi</i> , M. & H., 1857, pl. xxxii, figs. 4 a-d.....                         | 359-360  |
| <i>F.</i> ( <i>Piestochilus</i> ) <i>culbertsoni</i> , M. & H., 1856, pl. xxxii, figs. 1 a-f, fig. 44, p. 360.....         | 360-362  |
| <i>F.</i> ( <i>Piestochilus</i> ) <i>galpiniana</i> , M. & H., sp., 1856, pl. xxxii, figs. 2 a, b.....                     | 362-363  |
| <i>F.</i> ( <i>Piestochilus</i> ) <i>crenacea</i> , M. & H., 1856, pl. xxxi, figs. 11 a, b.....                            | 363-364  |
| <i>F.?</i> ( <i>Mesorhytis</i> ) <i>gracilentia</i> , Meek, fig. 45, p. 364.....                                           | 364-365  |
| <i>F.?</i> ( <i>Cryptorhytis</i> ) <i>cheyennensis</i> , M. & H., sp., 1860, pl. xix, figs. 13 a, b.....                   | 365-366  |
| <i>F.?</i> ( <i>Cryptorhytis</i> ) <i>flexicostata</i> , M. & H., sp., pl. xix, fig. 2 and fig. 46, p. 367.....            | 367-368  |
| <i>Pyropis</i> , Conrad, 1860.....                                                                                         | 368-36   |
| <i>P. bairdi</i> , M. & H., sp., 1856, pl. xxxi, figs. 10 a, b.....                                                        | 368-379  |
| <i>P. bairdi</i> var. <i>rotula</i> , Meek, pl. xxxi, fig. 10 and fig. 47, p. 371.....                                     | 371-372  |
| <i>Fusus</i> , Bruguière, 1789.....                                                                                        | 372-374  |
| <i>Serrifusus</i> , Meek.....                                                                                              | 373      |
| <i>Sinietralia</i> , H. & A. Adams, 1853.....                                                                              | 373      |
| <i>Fusus?</i> ( <i>Serrifusus</i> ) <i>dakotensis</i> , M. & H., 1856, pl. xxxi, fig. 11 and pl. 32, figs. 6 a, b.....     | 374, 375 |
| <i>F.?</i> ( <i>Serrifusus</i> ) <i>dakotensis</i> , var., pl. xxxii, fig. 7 a and 7 b?.....                               | 375-377  |
| <i>Cantharus</i> , Bolten, 1798.....                                                                                       | 377-379  |
| <i>Tritonidea</i> , Swainson, 1840.....                                                                                    | 378      |
| <i>Cantharulus</i> , Meek.....                                                                                             | 378      |
| <i>C.</i> ( <i>Cantharulus</i> ) <i>vaughani</i> , M. & H., sp., pl. xxxii, figs. 5 a, b, and fig. 48, p. 379.....         | 379-380  |
| <i>Pleurotomida.</i>                                                                                                       |          |
| <i>Turris</i> , Bolten, 1798.....                                                                                          | 380-384  |
| <i>Surcula</i> , H. & A. Adams, 1853 (= <i>Turricula</i> , Schum.; not of others).....                                     | 381      |
| <i>Surculites</i> , Conrad, 1865.....                                                                                      | 382      |
| <i>Genota</i> , H. & A. Adams, 1853 (not Adanson).....                                                                     | 382      |
| <i>T. minor</i> , E. & S., sp. 1857, pl. xxxi, figs. 9 a-c.....                                                            | 384-385  |
| <i>T.</i> ( <i>Surcula</i> ) <i>contortus</i> , M. & H., 1856, pl. xxxi, figs. 7 a-c, fig. 49, p. 385.....                 | 385-386  |
| <i>T.</i> ( <i>Surcula</i> )? <i>hitzi</i> , Meek, fig. 50, p. 387.....                                                    | 386-388  |
| <i>Cephalopoda.</i>                                                                                                        |          |
| <i>Tetrabranchiata.</i>                                                                                                    |          |
| <i>Baculitida.</i>                                                                                                         |          |
| <i>Baculites</i> , Lamarck, 1799.....                                                                                      | 388-391  |
| <i>Cyrtochilus</i> , Meek.....                                                                                             | 392      |
| <i>B. ovatus</i> , Say, 1821, pl. xx, figs. 2 a, b, d, and 1 a, b, and fig. 53, p. 397.....                                | 394-397  |
| <i>B. grandis</i> , H. & M., 1854, pl. xxxiii, figs. 1 a-c and fig. 53, p. 399 and fig. 54, p. 400.....                    | 398-400  |
| <i>B. compressus</i> , Say, 1821, pl. xx, figs. 3 a-c and figs. 53, 54, p. 403.....                                        | 400-404  |
| <i>B. asper</i> , Morton? 1834, pl. xxxix, figs. 10 a, d (not b, c).....                                                   | 404-405  |
| <i>B. anceps</i> var. <i>obtusius</i> , figs. 57-60, p. 406.....                                                           | 406-408  |

\* *obovis*, a tooth; *basius*, a base.

|                                                                                                       | Page.   |
|-------------------------------------------------------------------------------------------------------|---------|
| <i>Ancyloceratidae.</i>                                                                               |         |
| <i>Ancyloceras</i> , d'Orbigny, 1841.....                                                             | 408-409 |
| <i>A. ? unicum</i> , M. & H., 1858, pl. xxi, figs. 1 a, b.....                                        | 409-410 |
| <i>Ptychoceratidae.</i>                                                                               |         |
| <i>Ptychoceras</i> , d'Orbigny, 1841.....                                                             | 410-412 |
| <i>P. mortoni</i> , M. & H., 1857, pl. xx, figs. 4, a-c.....                                          | 412-413 |
| <i>Scaphitidae.</i>                                                                                   |         |
| <i>Scaphites</i> , Parkinson, 1811.....                                                               | 413-418 |
| <i>Macroscaphites</i> , Meek.....                                                                     | 414     |
| <i>Scaphites</i> , Parkinson.....                                                                     | 414     |
| <i>Discocephites</i> , Meek, 1872.....                                                                | 15      |
| <i>S. larvæformis</i> , M. & H., 1856, pl. vi, figs. 6 a-c.....                                       | 418-419 |
| <i>S. warreni</i> , M. & H., 1860, pl. vi, fig. 5 and figs. 61, 62, p. 421.....                       | 420-423 |
| <i>S. verruiformis</i> , M. & H., 1862, pl. vi, figs. 4 a, b.....                                     | 423-425 |
| <i>S. ventricosus</i> , M. & H., 1862, pl. vi, figs. 7 a, b, and figs. 8 a, b.....                    | 425-426 |
| <i>S. nodosus</i> var. <i>breris</i> , pl. xxv, figs. 1 a-c.....                                      | 426-428 |
| <i>S. nodosus</i> var. <i>quadrangularis</i> , pl. xxv, figs. 3 a-c, 2 a-c and fig. 4.....            | 428-429 |
| <i>S. nodosus</i> var. <i>plenus</i> , pl. xxvi, figs. 1 a-c.....                                     | 429-430 |
| <i>S. (Discocephites) conradi</i> , Morton, sp., 1834, pl. xxxvi, figs. 2 a-c.....                    | 430-432 |
| <i>S. (Discocephites) conradi</i> , var. <i>gulosus</i> , Morton, 1834, pl. xxxvi, fig. 1.....        | 432-433 |
| <i>S. (Discocephites) conradi</i> , var. <i>intermedius</i> , pl. xxxiv, figs. 3 a-c.....             | 433-435 |
| <i>S. (Discocephites) nicoleti</i> , Morton, sp., 1841, pl. xxxiv, figs. 4 a-c and 3 a-b.....         | 435-436 |
| <i>S. (Discocephites) cheyennensis</i> , Owen, sp., 1852, pl. xxxv, figs. 3 a-d.....                  | 437-441 |
| <i>S. (Discocephites) abyssinus</i> , Morton, sp., 1841, pl. xxxv, figs. 2 a, b and 4.....            | 441-443 |
| <i>S. (Discocephites) mandanensis</i> , Morton, sp., 1841, pl. xxxv, figs. 1 a-c.....                 | 443-444 |
| <i>Ammonitidae.</i>                                                                                   |         |
| <i>Ammonites</i> , Brug., 1789.....                                                                   | 445-447 |
| <i>A. complexus</i> , H. & M., 1854, pl. xxiv, figs. 1 a-c.....                                       | 447-448 |
| <i>Mortonicerus</i> , n. g., Meek, 1876.....                                                          | 448-449 |
| <i>M. shoshonense</i> , Meek, pl. vi, figs. 3 a, c and 6 b.....                                       | 449-450 |
| <i>M. ? terminalense</i> , M. & H., 1860, pl. vii, fig. 2 a, b.....                                   | 450-452 |
| <i>Prionocyclus</i> , Meek, 1872.....                                                                 | 452-453 |
| <i>Prionotropis</i> , Meek.....                                                                       | 453     |
| <i>P. (Prionotropis) woolgari</i> , Mantell, sp., 1822, pl. vii, figs. 1 a-A, and pl. vi, fig. 2..... | 455-457 |
| <i>Phylloceras</i> , Suess, 1865.....                                                                 | 458     |
| <i>P. ? halli</i> , M. & H., 1856, pl. xxiv, figs. 3 a-c and fig. 64, p. 458.....                     | 458-462 |
| <i>Placenticerus</i> , Meek, 1870.....                                                                | 462-464 |
| <i>Sphenodiscus</i> , Meek, 1872.....                                                                 | 463     |
| <i>P. placenta</i> , DeKay, sp., 1828, pl. xxiv, figs. 2 a, b and fig. 65, p. 466.....                | 465-468 |
| <i>P. placenta</i> var. <i>intercalare</i> , pl. xxiii, figs. 1 a-c.....                              | 468-472 |
| <i>P. (Sphenodiscus) lenticulare</i> , Owen, sp., 1852, pl. xxxiv, figs. 1 a-c, fig. 66, p. 473.....  | 472-476 |
| <i>Turritidae.</i>                                                                                    |         |
| <i>Heteroceras</i> , d'Orbigny, 1849.....                                                             | 477-478 |
| <i>H. ? cochleatum</i> , H. & M., pl. xxii, figs. 2 a, b.....                                         | 478-479 |
| <i>H. ? nebrascense</i> , M. & H., 1856, pl. xxii, figs. 1 a-c.....                                   | 480-481 |
| <i>H. tortum</i> , M. & H., 1858, pl. xxii, figs. 4 a-c.....                                          | 481-482 |
| <i>H. ? umbilicatum</i> , M. & H., 1858, pl. xxii, fig. 5.....                                        | 482-483 |
| <i>H. ? cheyennense</i> , M. & H., 1856, pl. xxi, figs. 2 a, b.....                                   | 483-484 |
| <i>H. ? angulatum</i> , M. & H., 1860, pl. xxi, figs. 3 a-c.....                                      | 484-485 |
| <i>Helicoceras</i> , d'Orbigny, 1840.....                                                             | 485-487 |
| <i>Paluceras</i> , Meek.....                                                                          | 485     |
| <i>Helicoceras mortoni</i> var. <i>tenuicostatum</i> , pl. xxii, figs. 3 a-c.....                     | 487-489 |
| <i>Nautilidae.</i>                                                                                    |         |
| <i>Nautilus</i> , Linnaeus, 1758.....                                                                 | 490-495 |
| <i>Perrinites</i> , McCoy, 1844.....                                                                  | 490     |
| <i>Perrinites</i> , M. & W., 1861.....                                                                | 491     |
| <i>Nautes</i> (De Hann), McCoy, 1825.....                                                             | 491     |
| <i>Solenoceras</i> , M. & W., 1870 (= <i>Oryptoceras</i> , d'Orbigny).....                            | 491     |
| <i>Heteropneustes</i> , Conrad, 1846 (= <i>Agonides</i> , Montfort ?).....                            | 491     |
| <i>Pseudonautilus</i> , Meek.....                                                                     | 491     |
| <i>N. deKayi</i> , Morton, 1834, pl. xxvii, figs. 1 a-c and fig. 67, p. 496.....                      | 496-498 |
| <i>N. deKayi</i> var. <i>modonoceras</i> , pl. xxvii, figs. 2 a-c.....                                | 498     |
| <i>N. elegans</i> , Sowerby, 1816, pl. viii, figs. 2 a-c.....                                         | 499-501 |

|                                                                                                                                                                                                     | Page.   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <i>Dibranchiata.</i>                                                                                                                                                                                |         |
| <i>Belemnitidae.</i>                                                                                                                                                                                |         |
| <i>Belemnitella</i> , d'Orbigny, 1840 .....                                                                                                                                                         | 501-503 |
| <i>B. bulbosa</i> , M. & H., 1856, pl. xxxiii, figs. 2 a-e .....                                                                                                                                    | 504     |
| <i>Teuthidae.</i>                                                                                                                                                                                   |         |
| <i>Phylloteuthis</i> , M. & H., 1860 .....                                                                                                                                                          | 505     |
| <i>P. subovata</i> , M. & H., 1860, pl. xxxiii, fig. 3 .....                                                                                                                                        | 505-506 |
| <i>Articulata.</i>                                                                                                                                                                                  |         |
| <i>Annulata.</i>                                                                                                                                                                                    |         |
| <i>Tubicolata.</i>                                                                                                                                                                                  |         |
| <i>Serpulidae.</i>                                                                                                                                                                                  |         |
| <i>Serpula</i> , Linnæus, 1758 .....                                                                                                                                                                | 506-507 |
| <i>S. ? tenuicarinata</i> , M. & H., 1857, pl. vi, fig. 1 .....                                                                                                                                     | 507-508 |
| SPECIES OF THE FRESH AND BRACKISH WATER LIGNITE BEDS.                                                                                                                                               |         |
| <i>Mollusca.</i>                                                                                                                                                                                    |         |
| <i>Lamellibranchiata.</i>                                                                                                                                                                           |         |
| <i>Monomyaria.</i>                                                                                                                                                                                  |         |
| <i>Ostreidae.</i>                                                                                                                                                                                   |         |
| <i>Ostrea</i> , Linnæus .....                                                                                                                                                                       | 509     |
| <i>O. subtrigonalis</i> , E. & S. ? 1857, pl. xi, figs. 1 a-d .....                                                                                                                                 | 510     |
| <i>Dimyaria.</i>                                                                                                                                                                                    |         |
| <i>Unionidae.</i>                                                                                                                                                                                   |         |
| <i>Unio</i> , Retzius, 1788 .....                                                                                                                                                                   | 511-515 |
| <i>Barriasta</i> , Raf., 1820 (= <i>Potamida</i> , Swainson) .....                                                                                                                                  | 513     |
| <i>Naidea</i> , Swainson, 1840 .....                                                                                                                                                                | 514     |
| <i>Obovaria</i> , Raf., 1819 (= <i>Rhipidodonta</i> , Mörb) .....                                                                                                                                   | 514     |
| <i>Niæa</i> , Swainson, 1837 .....                                                                                                                                                                  | 514     |
| <i>Hyridella</i> , Swainson .....                                                                                                                                                                   | 514     |
| <i>Lampsis</i> , Raf., 1820 (= <i>Truncilla</i> , <i>Pleurobema</i> , <i>Syntoxia</i> , <i>Scalenaria</i> , and <i>Plagiola</i> , Raf.; <i>Crenodonta</i> , Schlüt.; <i>Æglia</i> , Swainson) ..... | 514     |
| <i>Canthyria</i> , Swainson, 1840 .....                                                                                                                                                             | 514     |
| <i>Iridea</i> , Swainson, 1840 (= <i>Tritigonia</i> and <i>Orthonymus</i> , Agassiz) .....                                                                                                          | 514     |
| <i>Rotundaria</i> , Raf., 1820 (= <i>Oyprogenia</i> , Agassiz) .....                                                                                                                                | 514     |
| <i>Quadrula</i> , Raf., 1820 (= <i>Theliderma</i> , Swainson) .....                                                                                                                                 | 514     |
| <i>Diplodon</i> , Spix, 1827 (= <i>Cucumaria</i> , Conrad, and <i>Næia</i> , Swainson) .....                                                                                                        | 514     |
| <i>Dynomya</i> , Agassiz, 1852 .....                                                                                                                                                                | 514     |
| <i>Metaptera</i> , Raf., 1820 (= <i>Proptera</i> , Raf., and <i>Lymnadia</i> and <i>Megadomus</i> , Swainson) .....                                                                                 | 515     |
| <i>U. priscus</i> , M. & H., 1856, pl. xliii, figs. 8 a-d .....                                                                                                                                     | 516-517 |
| <i>U. danae</i> , M. & H., 1857, pl. xli, figs. 3 a-e .....                                                                                                                                         | 517-518 |
| <i>U. subpatulatus</i> , M. & H., 1857, pl. xli, figs. 1 a, b .....                                                                                                                                 | 518-519 |
| <i>U. deweyanus</i> , M. & H., 1857, pl. xli, figs. 2 a-e .....                                                                                                                                     | 519     |
| <i>Cyrenidae.</i>                                                                                                                                                                                   |         |
| <i>Corbicula</i> , Mühlfeldt .....                                                                                                                                                                  | 520     |
| <i>C. cytheriformis</i> , M. & H., 1860, pl. xl, figs. 5 a-e .....                                                                                                                                  | 520-521 |
| <i>C. occidentalis</i> , M. & H., 1856, pl. xl, figs. 6 a-c .....                                                                                                                                   | 521-522 |
| <i>C. nebrascensis</i> , M. & H., 1860, pl. lxiii, figs. 2 a, b (not 2 c) .....                                                                                                                     | 522     |
| Subgenus <i>Leptesthes</i> .....                                                                                                                                                                    | 523     |
| <i>C. (Leptesthes) subelliptica</i> , M. & H., 1856, pl. xliii, figs. 9 a-c .....                                                                                                                   | 523-524 |
| <i>C. (Leptesthes) subelliptica</i> var. <i>moreauensis</i> , pl. xliii, figs. 1 a, b and 2 c .....                                                                                                 | 524     |
| <i>Sphærium</i> , Scopoli, 1777 .....                                                                                                                                                               | 525     |
| <i>S. planum</i> , M. & H., 1860, pl. lxiii, figs. 6 a, b .....                                                                                                                                     | 526     |
| <i>S. formosum</i> , M. & H., 1860, pl. lxiii, figs. 4 a-c .....                                                                                                                                    | 526-527 |
| <i>S. subellipticum</i> , M. & H., 1860, pl. lxiii, figs. 5 a, b .....                                                                                                                              | 527     |
| <i>S. recticardinale</i> , M. & H., 1860, pl. lxiii, figs. 3 a, b .....                                                                                                                             | 527-528 |
| <i>Corbulidae.</i>                                                                                                                                                                                  |         |
| <i>Corbula</i> , Bruguière .....                                                                                                                                                                    | 528     |
| <i>Pachyodon</i> , Gabb .....                                                                                                                                                                       | 528     |
| <i>C. (Pachyodon) mactriiformis</i> , M. & H., 1856, pl. lxiii, figs. 7 a-f .....                                                                                                                   | 528-529 |
| <i>C. (Pachyodon) subtrigonalis</i> , M. & H., 1856, pl. xl, figs. 3 a, b .....                                                                                                                     | 529-530 |
| <i>C. (Pachyodon) perundata</i> , M. & H., 1856, pl. xl, figs. 4 a-d .....                                                                                                                          | 530-531 |
| <i>Gastropoda.</i>                                                                                                                                                                                  |         |
| <i>Pulmonata.</i>                                                                                                                                                                                   |         |
| <i>Limnæidae.</i>                                                                                                                                                                                   |         |
| <i>Limnæa</i> , Lamarck, 1799 .....                                                                                                                                                                 | 531-533 |
| <i>Radix</i> , Montfort, 1810 (= <i>Gulnaria</i> , Leach) .....                                                                                                                                     | 532     |

|                                                                                                      | Page.   |
|------------------------------------------------------------------------------------------------------|---------|
| <i>Polyrhysis</i> , Meek .....                                                                       | 532     |
| <i>Bulinnea</i> , Haldeman, 1842 .....                                                               | 532     |
| <i>Limnophysa</i> , Fitzinger, 1833 (= <i>Stagnicola</i> , Loach & Galba, Schrank) .....             | 533     |
| <i>Omphicola</i> , Raf. (= <i>Leptolimnea</i> , Swainson) .....                                      | 533     |
| <i>Acella</i> , Haldeman, 1842 .....                                                                 | 533     |
| <i>Pleurolimnæa</i> , Meek, 1866 .....                                                               | 533     |
| <i>L. (Pleurolimnæa) tenuicostata</i> , M. & H., 1856, pl. xliv, figs. 13 a-c .....                  | 534     |
| <i>Planorbis</i> , Müller, 1776 .....                                                                | 534-536 |
| <i>Helisoma</i> , Swainson, 1840 .....                                                               | 535     |
| <i>Planorbella</i> , Haldeman, 1842 .....                                                            | 536     |
| <i>Taphius</i> , H. & A. Adams, 1856 .....                                                           | 536     |
| <i>Menetus</i> , H. & A. Adams, 1856 (= <i>Anisus</i> , Beck, not Fitz.) .....                       | 536     |
| <i>Anisus</i> , Fitzinger, 1833 (= <i>Tropidiscus</i> , Stein.) .....                                | 536     |
| <i>Bathyomphalus</i> , Agassiz, 1837 (= <i>Spirorbis</i> , Swainson, not Lamarck) .....              | 536     |
| <i>Gyrulus</i> , Agassiz (= <i>Nautilina</i> , Stein.) .....                                         | 536     |
| <i>P. convolutus</i> , M. & H., 1856, pl. xlii, figs. 12 a, b .....                                  | 536-537 |
| <i>P. convolutus</i> var., pl. xlii, figs. 11 a-e .....                                              | 538     |
| <i>P. (Bathyomphalus) planoconvexus</i> , M. & H., 1857, pl. xliv, figs. 9 a-c .....                 | 538-539 |
| <i>P. (Bathyomphalus) amplexus</i> , M. & H., 1857, pl. lxii, figs. 16 a-e .....                     | 539     |
| <i>Physidæ.</i>                                                                                      |         |
| <i>Bulinus</i> , O. F. Müller, 1781 .....                                                            | 540     |
| <i>B. rubelongatus</i> , M. & H., 1856, pl. lxii, figs. 13 a, b .....                                | 540-541 |
| <i>B. longiusculus</i> , M. & H., 1856, pl. xliii, figs. 16 a, b .....                               | 541-542 |
| <i>B. rhomboideus</i> , M. & H., 1856, pl. xliii, fig. 17 .....                                      | 542     |
| <i>Ancylidæ.</i>                                                                                     |         |
| <i>Aceroluxus</i> , Beck, 1837 .....                                                                 | 543     |
| <i>A. minutus</i> , M. & H., 1856, pl. xliv, fig. 10 .....                                           | 543-544 |
| <i>Vitrinidæ.</i>                                                                                    |         |
| <i>Vitrina</i> , Draparnaud, 1801 .....                                                              | 544     |
| <i>V. obliqua</i> , M. & H., 1857, pl. xlii, figs. 10 a, b .....                                     | 545     |
| <i>Hyalina</i> , Férussac, 1819 .....                                                                | 545-547 |
| <i>H. occidentalis</i> , M. & H., 1857, pl. xlii, figs. 6 a-d .....                                  | 547-548 |
| <i>H. evansi</i> , M. & H., 1860, figs. 68, 69, 70, p. 548 .....                                     | 548-549 |
| <i>Helicidæ.</i>                                                                                     |         |
| <i>Helix</i> , Linnæus, 1758 .....                                                                   | 549-551 |
| <i>Galaxias</i> , Beck, 1837 .....                                                                   | 549     |
| <i>Camæna</i> , Albers, 1850 .....                                                                   | 550     |
| <i>Helix vetusta</i> , M. & H., 1860, pl. xlii, figs. 7 a, b .....                                   | 552     |
| <i>Thaumastus</i> , Albers, 1860 .....                                                               | 553     |
| <i>T. limnæiformis</i> , M. & H., 1856, pl. xliv, figs. 8, a-d .....                                 | 553-554 |
| <i>Columna</i> , Perry, 1811 .....                                                                   | 554     |
| <i>Rhoda</i> , H. & A. Adams, 1855 .....                                                             | 555     |
| <i>Columna teres</i> , M. & H., 1856, pl. xliv, figs. 11 a, b .....                                  | 555-556 |
| <i>C. vermicula</i> , M. & H., 1856, pl. xliv, figs. 12 a, b .....                                   | 556-557 |
| <i>C. vermicula</i> var. <i>contraria</i> , Meek, 1866 .....                                         | 557     |
| <i>Pectinibranchiata.</i>                                                                            |         |
| <i>Cerithidæ.</i>                                                                                    |         |
| <i>Cerithidea</i> , Swainson, 1840 .....                                                             | 558     |
| <i>Pirenella</i> , Gray, 1847 .....                                                                  | 558     |
| <i>Cerithidea (Pirenella) nebrascensis</i> , M. & H., 1856, pl. xliii, figs. 9 a-c (bis) .....       | 559     |
| <i>Ceriphasidæ.</i>                                                                                  |         |
| <i>Goniobasis</i> , Lea, 1862 .....                                                                  | 560-561 |
| <i>G. convexa</i> , M. & H., 1856, pl. xlii, figs. 2 a, b, and figs. 71, p. 562 and 72, p. 563 ..... | 562-563 |
| <i>G. convexa</i> var. <i>impressa</i> , M. & H., 1857, pl. xlii, figs. 2 c, d .....                 | 563-564 |
| <i>G. inenusta</i> , M. & H., 1857, pl. xlii, figs. 1 a-e .....                                      | 564-565 |
| <i>G. nebrascensis</i> , M. & H., 1856, pl. xliii, figs. 12 a-h, and fig. 73, p. 565 .....           | 565-568 |
| <i>G. tenuicarinata</i> , M. & H., 1857, pl. xliii, figs. 14 a-c .....                               | 566-567 |
| <i>G. sublevis</i> , M. & H., 1857, pl. xlii, figs. 5 a, b .....                                     | 567     |
| <i>G. ? omitta</i> , M. & H., 1857, pl. xlii, figs. 4 a-c .....                                      | 568     |
| <i>G. gracilentia</i> , Meek, pl. xlii, fig. 3 and fig. 74, p. 569 .....                             | 568-569 |
| <i>G. ? subtorquosa</i> , M. & H., 1857, pl. xlii, figs. 17, a-b, and figs. 75, 76, p. 569 .....     | 569-570 |
| <i>Rissoidæ.</i>                                                                                     |         |
| <i>Hydrobia</i> , Hartmann, 1821 .....                                                               | 571     |
| <i>H. anthonyi</i> , M. & H., 1856, pl. xliii, figs. 10 a-d .....                                    | 571-572 |
| <i>H. warreniana</i> , M. & H., 1857, pl. xliii, figs. 1 a-e .....                                   | 572-573 |



|                                                                                            | Page.   |
|--------------------------------------------------------------------------------------------|---------|
| <i>H. subconica</i> , Meek, fig. 77, p. 573 .....                                          | 573     |
| <i>H. ? eulimoides</i> , Meek, fig. 78, p. 573 .....                                       | 573-574 |
| <i>Micropyrgus</i> , Meek, 1866 .....                                                      | 574-575 |
| <i>M. minutulus</i> , M. & H., 1856, pl. xliii, figs. 18 a, b .....                        | 575     |
| <i>Viviparidae</i> .                                                                       |         |
| <i>Viviparus</i> , Montfort, 1810 .....                                                    | 576-577 |
| <i>V. leai</i> , M. & H., 1856, pl. xliiv, figs. 6 a-d .....                               | 577-578 |
| <i>V. retusus</i> , M. & H., 1856, pl. xliiv, figs. 5 a-f .....                            | 578-579 |
| <i>V. conradi</i> , M. & H., 1856, pl. xlii, figs. 15 a-d .....                            | 579-580 |
| <i>V. peculiaris</i> , M. & H., 1856 fig. 79. ....                                         | 580     |
| <i>V. trochiformis</i> , M. & H., 1856, pl. xliiv, fig. 2 a-e .....                        | 580-582 |
| <i>V. leidyi</i> , M. & H., 1856, pl. xliiv, fig. 4 .....                                  | 582-583 |
| <i>V. leidyi</i> var. <i>formosus</i> , pl. xliiv, figs. 3 a, b .....                      | 583     |
| <i>V. raynoldeanus</i> , M. & H., 1861, pl. xliiv, figs. 7 a, b .....                      | 584-585 |
| <i>Campeoloma</i> , Rafinesque .....                                                       |         |
| <i>C. multilineata</i> , M. & H., 1856, pl. xliiv, figs. 1 a, b .....                      | 586-587 |
| <i>C. retula</i> , M. & H., 1856 pl. xliiv, figs. 14 a, b .....                            | 587-588 |
| <i>C. multistriata</i> , M. & H., 1856, pl. xliii, figs. 15 a-e, and fig. 80, p. 588 ..... | 588-589 |
| <i>Valvatidae</i> .                                                                        |         |
| <i>Valvata</i> , Müller, 1774 .....                                                        | 589-590 |
| <i>Tropidina</i> , H. & A. Adams, 1856 .....                                               | 590     |
| <i>V. subumbilicata</i> , M. & H., 1856, pl. xliii, figs. 13 a-c .....                     | 590-591 |
| <i>V. parvula</i> , M. & H., 1856 .....                                                    | 591     |
| <i>V. ? montanaensis</i> , Meek, figs. 81, 82, 83, p. 591 .....                            | 591-592 |

## FOSSILS OF THE WIND RIVER TERTIARY.

*Mollusca*.*Gasteropoda*.*Pulmonata*.*Vitrinidae*.

|                                                                                             |         |
|---------------------------------------------------------------------------------------------|---------|
| <i>Macrocyclus</i> , Beck, 1837 .....                                                       | 593-594 |
| <i>Ampelita</i> , Beck, 1837 .....                                                          | 594     |
| <i>M. spatiosa</i> , M. & H., 1861, pl. xlii, figs. 9 a-c .....                             | 594-595 |
| <i>Helicidae</i> .                                                                          |         |
| <i>Helix</i> , Linn .....                                                                   | 596     |
| <i>H. ? veterna</i> , M. & H., 1861, pl. xlii, figs. 8 a, b, and figs. 84, 85, p. 596 ..... | 596-597 |

## FOSSILS OF THE WHITE RIVER TERTIARY.

*Mollusca*.*Gasteropoda*.*Pulmonata*.*Limnæidae*.

|                                                                               |         |
|-------------------------------------------------------------------------------|---------|
| <i>Limnæa</i> , Lamarck .....                                                 | 598     |
| <i>L. meekiana</i> , E. & S., pl. xlv, figs. 5 a-c .....                      | 598-599 |
| <i>L. shumardi</i> , Meek, pl. xlv, figs. 6 a, b .....                        | 599     |
| <i>Planorbis</i> , Müller .....                                               | 599     |
| <i>P. leidyi</i> , M. & H., 1860, pl. xlv, figs. 3 a-d .....                  | 599-600 |
| Subgenus <i>Menetus</i> , H. & A. Adams ? .....                               | 600     |
| <i>P. (Menetus) nebrascensis</i> , E. & S., 1854, pl. xlv, figs. 2 a, b ..... | 600-601 |
| <i>P. (Menetus) retusus</i> , M. & H., 1860, pl. xlv, figs. 1 a-c .....       | 601-602 |

*Physidae*.

|                                                                         |         |
|-------------------------------------------------------------------------|---------|
| <i>Physa</i> , Draparnaud, 1801 .....                                   | 603-604 |
| <i>Physella</i> , Haldeman, 1842 .....                                  | 603     |
| <i>Physodon</i> , Haldeman, 1842 .....                                  | 603     |
| <i>Isidoris</i> , Ehrenb., 1831 (= <i>Diastrophis</i> , Guilding) ..... | 604     |
| <i>Costella</i> , Dall, 1870 .....                                      | 604     |
| <i>P. secutina</i> , E. & S., 1854, pl. xlv, figs. 4 a, b .....         | 604     |

*Helicidae*.

|                                                               |         |
|---------------------------------------------------------------|---------|
| <i>Helix</i> , Linn .....                                     | 604     |
| <i>H. leidyi</i> , H. & M., 1854, pl. xlv, figs. 7 a, b ..... | 604-605 |

## APPENDIX.

|                                                                                    |         |
|------------------------------------------------------------------------------------|---------|
| <i>Tellina (Arcopagia) ? cheyennensis</i> , M. & H., 1856, pl. xvii, fig. 16 ..... | 607     |
| <i>Ammonites ? ? mullanianus</i> , M. & H., 1862, pl. viii, figs. 1 a-c .....      | 607-609 |

MEEK, F. B. Palæontology. <Rep. Geol. Expl. 40th Parallel, vol. iv, part i, pp. 1-197, pls. i-xvii. Washington, 1877.

Silurian, Devonian, Carboniferous, Triassic, Jurassic, Cretaceous, Tertiary. Genera *Ammonoeceras* (Hyatt), *Eudisoceras* (Hyatt), *Polyrhynchis*, *Rhytrophorus*, *Pyrgulifera*.

## DESCRIPTIONS OF FOSSILS.

|                           | SILURIAN SPECIES.                                                                                  | Page   |
|---------------------------|----------------------------------------------------------------------------------------------------|--------|
| <i>Mollusca.</i>          |                                                                                                    |        |
| <i>Gastropoda.</i>        |                                                                                                    |        |
| <i>Solariida.</i>         |                                                                                                    |        |
|                           | <i>Ophileta</i> , Vanuxem .....                                                                    | 17     |
|                           | <i>O. complanata</i> var. <i>nana</i> , Meek, 1870, pl. i, figs. 1, 1 a, 1 b .....                 | 17-18  |
|                           | <i>Raphistoma</i> , Hall .....                                                                     | 18     |
|                           | <i>R. ? rotuliformis</i> , Meek, 1870, pl. i, figs. 2, 2 a, b .....                                | 18-19  |
|                           | <i>R. ? trochicus</i> , Meek, 1870, pl. i, figs. 3, 3 a, b .....                                   | 19     |
| <i>Articulata.</i>        |                                                                                                    |        |
| <i>Crustacea.</i>         |                                                                                                    |        |
| <i>Paradozida.</i>        |                                                                                                    |        |
|                           | <i>Onnecoryphe</i> , Corda .....                                                                   | 20     |
|                           | <i>C. (Ptychoparia) kingii</i> , Meek, 1870, pl. i, fig. 4 .....                                   | 20-21  |
|                           | <i>Paradozides</i> , Brongniart .....                                                              | 21     |
|                           | <i>P. ? nevadensis</i> , Meek, 1870, pl. i, fig. 5 .....                                           | 21-22  |
| DEVONIAN SPECIES.         |                                                                                                    |        |
| <i>Radiata.</i>           |                                                                                                    |        |
| <i>Polypi.</i>            |                                                                                                    |        |
| <i>Favositida.</i>        |                                                                                                    |        |
|                           | <i>Alveolites</i> , Lamarck .....                                                                  | 25     |
|                           | <i>A. multilamella</i> , n. s., Meek, 1877, pl. ii, figs. 7, 7 a, b .....                          | 25-26  |
|                           | <i>Alveolites</i> , undt. sp., Meek, 1877 .....                                                    | 26-27  |
|                           | <i>Favosites</i> , Lamarck .....                                                                   | 27     |
|                           | <i>Favosites</i> , undt. sp., Meek, 1877, pl. i, fig. 6 .....                                      | 27     |
|                           | <i>F. polymorpha</i> , Goldf. ? var. Meek, 1877, pl. ii, fig. 8 .....                              | 27-28  |
|                           | <i>Syringopora</i> , Goldfuss .....                                                                | 28     |
|                           | <i>Syringopora</i> , undt. sp., Meek, 1877 .....                                                   | 28     |
| <i>Cyathophyllida.</i>    |                                                                                                    |        |
|                           | <i>Ptychophyllum</i> , E. & H. ....                                                                | 28     |
|                           | <i>P. ? infundibulum</i> , n. s., Meek, 1877, pl. ii, figs. 1, 1 a, b .....                        | 28-29  |
|                           | <i>Diphyphyllum</i> , Lonsdale .....                                                               | 29     |
|                           | <i>D. fasciculum</i> , n. s., Meek, 1877, pl. ii, figs. 4, 4 a, b .....                            | 29-31  |
|                           | <i>Acervularia</i> , Schweigger .....                                                              | 31     |
|                           | <i>A. pentagona</i> , Goldfuss, sp., 1826, pl. ii, figs. 5, 5 a .....                              | 31-32  |
|                           | <i>Smithia</i> , E. & H. ....                                                                      | 32     |
|                           | <i>S. hennahii</i> , Lonsdale, sp., 1840, pl. 2, figs. 6, 6 a .....                                | 32-33  |
|                           | <i>Cyathophyllum</i> , Goldfuss .....                                                              | 33     |
|                           | <i>C. palmeri</i> , n. s., Meek, 1877, pl. ii, fig. 2 .....                                        | 33-34  |
| <i>Mollusca.</i>          |                                                                                                    |        |
| <i>Brachiopoda.</i>       |                                                                                                    |        |
| <i>Strophomenida.</i>     |                                                                                                    |        |
|                           | <i>Hemipronites</i> , Pander .....                                                                 | 35     |
|                           | <i>H. chemungensis</i> var. <i>arctostriata</i> , Conrad, sp., pl. iii, fig. 2 .....               | 35-36  |
| <i>Productida.</i>        |                                                                                                    |        |
|                           | <i>Productus</i> , Sowerby .....                                                                   | 36     |
|                           | <i>P. subaequalatus</i> , Murchison ? 1840, pl. iii, figs. 7, 7 a, b .....                         | 36-37  |
| <i>Rhynchonellida.</i>    |                                                                                                    |        |
|                           | <i>Atrypa</i> , Dalman .....                                                                       | 38     |
|                           | <i>A. reticularis</i> , Linnaeus, sp., 1767, pl. i, figs. 7 and 7 a, and pl. 2, figs. 61 6 a ..... | 38, 39 |
| <i>Spiriferida.</i>       |                                                                                                    |        |
|                           | <i>Spirifer</i> , Sowerby .....                                                                    | 39     |
|                           | <i>S. utahensis</i> , Meek, 1860, pl. iii, figs. 1, 1 a-c .....                                    | 39-41  |
|                           | <i>S. engelmanni</i> , Meek, 1860, pl. iii, figs. 3 a-c (and 3 d-f) .....                          | 41-42  |
|                           | <i>S. (Trigonotreta) argentarius</i> , n. s., Meek, 1877, pl. iii, figs. 4 and 4 a, b .....        | 42-43  |
|                           | <i>S. (Trigonotreta) strigosus</i> , Meek, 1860, pl. iii, figs. 5, 5 a, b .....                    | 43-45  |
|                           | <i>S. (Trigonotreta) pinonensis</i> , Meek, 1870, pl. i, figs. 9, 9 a, b .....                     | 45-46  |
| <i>Lamellibranchiata.</i> |                                                                                                    |        |

|                                                                                                 |       |
|-------------------------------------------------------------------------------------------------|-------|
| <i>Anatinidæ.</i>                                                                               | Page. |
| <i>Edmondia</i> , de Koninck .....                                                              | 46    |
| <i>E. ? piñonensis</i> , n. s., Meek, 1877, pl. i, figs. 8, 8 a .....                           | 46-47 |
| <i>Cephalopoda.</i>                                                                             |       |
| <i>Orthoceras</i> , Auct. ....                                                                  |       |
| <i>O. kingii</i> , n. s., Meek, 1877, pl. ii, fig. 8 .....                                      | 47-48 |
| <i>Orthoceras</i> , undt. sp., Meek, 1877, pl. ii, fig. 9 .....                                 | 48    |
| <i>Articulata.</i>                                                                              |       |
| <i>Crustacea.</i>                                                                               |       |
| <i>Phacopsidæ.</i>                                                                              |       |
| <i>Dalmanites</i> , Auct. ....                                                                  | 48    |
| <i>Dalmanites</i> , sp. undt., Meek, 1877, pl. i, figs. 11, 11 a .....                          | 48-49 |
| <i>Proetidæ.</i>                                                                                |       |
| <i>Proetus</i> , Steininger .....                                                               | 49    |
| <i>P. (Phæton) denticulatus</i> , n. s., Meek, 1877, pl. i, figs. 10, 10 a and b .....          | 49-50 |
| CARBONIFEROUS SPECIES.                                                                          |       |
| <i>Radiata.</i>                                                                                 |       |
| <i>Polypi.</i>                                                                                  |       |
| <i>Favositidæ.</i>                                                                              |       |
| <i>Syringopora</i> , Goldfuss. ....                                                             | 50    |
| <i>Syringopora</i> , undt. sp., Meek, 1877, pl. vi, figs. 2, 2 a .....                          | 50-51 |
| <i>Cyathophyllidæ.</i>                                                                          |       |
| <i>Zaphrentis</i> , Rafinesque & Clifford .....                                                 | 52    |
| <i>Z. excentrica</i> , n. s., Meek, 1877, pl. iv, figs. 1, 1 a-d .....                          | 52-53 |
| <i>Z. ? multiamella</i> , Hall ? 1852, pl. vi, figs. 4, 4 a and b .....                         | 53-54 |
| <i>Z. ? stansburii</i> , Hall ? 1852, pl. vi, figs. 3, 3 a-c .....                              | 54-56 |
| <i>Campophyllum</i> , E. & H. ....                                                              | 57    |
| <i>Campophyllum</i> , undt. sp., Meek, 1877, pl. v, figs. 2, 2 a and b .....                    | 57-58 |
| <i>Lithostrotion</i> , Fleming. ....                                                            | 58    |
| <i>L. whitneyi</i> , Meek, n. s., 1875, pl. vi, figs. 1, 1 a-c .....                            | 58-59 |
| <i>Cyathophyllum</i> , Goldfuss. ....                                                           | 60    |
| <i>C. (Campophyllum ?) nevadense</i> , n. s., Meek, 1877, pl. v, figs. 3, 3 a and b .....       | 60    |
| <i>C. subcaespitosum</i> , n. s., Meek, 1877, pl. v, figs. 4, 4 a and b .....                   | 60-61 |
| <i>Mollusca.</i>                                                                                |       |
| <i>Brachiopoda.</i>                                                                             |       |
| <i>Strophomenidæ.</i>                                                                           |       |
| <i>Hemipronites</i> , Pander .....                                                              | 62    |
| <i>H. crenistria</i> , Phillips, sp., 1836, pl. vii, fig. 2 .....                               | 62    |
| <i>Orthis</i> , Dalman .....                                                                    | 63    |
| <i>O. michelini</i> , L'Éveillé, var. Meek, 1877, pl. vii, figs. 1, 1 a-c .....                 | 63-64 |
| <i>Productidæ.</i>                                                                              |       |
| <i>Productus</i> , Sowerby .....                                                                | 64    |
| <i>P. nevadensis</i> , n. s., Meek, 1877, pl. viii, figs. 2, 2 a-c .....                        | 64-67 |
| <i>Productus</i> , undt. sp., Meek, 1877, pl. vii, figs. 6, 6 a and b .....                     | 67-68 |
| <i>P. semireticulatus</i> , Martin, 1709, pl. vii, fig. 5 .....                                 | 69    |
| <i>P. costatus</i> , Sowerby ? var. Meek, 1877, pl. vii, figs. 4, 4 a and b .....               | 69-72 |
| <i>P. prattianus</i> , Norwood, 1854, pl. vii, fig. 7 .....                                     | 72-73 |
| <i>P. semistriatus</i> , Meek, 1860, pl. vii, figs. 8, 8 a .....                                | 74-75 |
| <i>P. subhorridus</i> , n. s., Meek, 1877, pl. vii, figs. 3, 3 a and b .....                    | 75-76 |
| <i>P. multistriatus</i> , Meek, 1860, pl. viii, figs. 2, 2 a-c .....                            | 76-78 |
| <i>P. longispinus</i> , Sowerby, 1814, pl. viii, figs. 4, 4 a .....                             | 78-79 |
| <i>Rhynchonellidæ.</i>                                                                          |       |
| <i>Leiorhynchus</i> , Hall. ....                                                                | 79    |
| <i>L. quadricostatus</i> , Vanuxem ? sp., 1842, pl. iii, figs. 9, 9 a and b .....               | 79-80 |
| <i>Spiriferidæ.</i>                                                                             |       |
| <i>Athyris</i> , McCoy .....                                                                    | 81    |
| <i>A. ? persinuata</i> , n. s., Meek, 1877, pl. ix, figs. 4, 4 a and b .....                    | 81-82 |
| <i>A. roiesyi</i> , l'Éveillé, sp., 1835, pl. ix, figs. 3, 3 a and b .....                      | 82-83 |
| <i>A. subtilita</i> , Hall, 1852, pl. viii, figs. 6, 6 a .....                                  | 83-84 |
| <i>Spiriferina</i> d'Orbigny .....                                                              | 84    |
| <i>Spiriferina</i> , undt. sp., Meek, 1877, pl. viii, figs. 5, 5 a, b .....                     | 84-85 |
| <i>S. pulchra</i> , Meek, 1860, pl. viii, figs. 1, 1 a-c, and pl. xii, figs. 12, 12 a-d ? ..... | 85-87 |
| <i>Spirifer</i> , Sowerby .....                                                                 | 87    |
| <i>S. cuspidatus</i> , Martin ? sp., 1796, pl. iii, figs. 11, 11 a .....                        | 87-88 |
| <i>Spirifer (Trigonotreta) opimus</i> , Hall ? 1858, pl. ix, fig. 6 .....                       | 88-90 |
| <i>S. (Trigonotreta) scobina</i> , Meek, 1860, pl. ix, figs. 1, 1 a-d .....                     | 90-91 |
| <i>S. (Trigonotreta) cameratus</i> , Morton, 1836, pl. ix, figs. 2, 2 a .....                   | 91-92 |

|                                                                                              | Page    |
|----------------------------------------------------------------------------------------------|---------|
| <i>Lamellibranchiata.</i>                                                                    |         |
| <i>Pteriidae.</i>                                                                            |         |
| † <i>Posidonomya</i> , Bronn .....                                                           | 92      |
| <i>P. † fragosa</i> , n. s., Meek, 1877, pl. iii, figs. 8, 8 a .....                         | 92-93   |
| <i>Aviculopecten</i> , McCoy .....                                                           | 93      |
| <i>A. cactatus</i> , n. s., Meek, 1877, pl. iii, figs. 10, 10 a, and 10 b1 .....             | 93-95   |
| <i>A. utahensis</i> , Meek, 1880, pl. ix, figs. 7, 7 a and b (and 7 c, and d f) .....        | 95-96   |
| <i>A. occidentalis</i> , n. s., Meek, 1877, pl. xii, figs. 13, 13 a and b .....              | 96-97   |
| <i>Cephalopoda.</i>                                                                          |         |
| <i>Goniatitidae.</i>                                                                         |         |
| <i>Goniatites</i> , De Haan .....                                                            | 98      |
| <i>G. goniatolobus</i> , n. s., Meek, 1877, pl. ix, figs. 5, 5 a, b .....                    | 98-99   |
| UPPER TRIASSIC SPECIES.                                                                      |         |
| <i>Mollusca.</i>                                                                             |         |
| <i>Brachiopoda.</i>                                                                          |         |
| <i>Discinidae.</i>                                                                           |         |
| <i>Discina</i> , Lamarck .....                                                               | 99      |
| <i>Discina</i> , sp. undt., Meek, 1877, pl. x, figs. 3, 3 a .....                            | 99-100  |
| <i>Lamellibranchiata.</i>                                                                    |         |
| <i>Pteriidae.</i>                                                                            |         |
| <i>Halobia</i> , Bronn .....                                                                 | 100     |
| <i>H. (Daonella) lommeli</i> , Wisemann, 1841, pl. x, fig. 5 .....                           | 100-102 |
| <i>Lucinidae.</i>                                                                            |         |
| <i>Sphæra</i> , Sowerby .....                                                                | 102     |
| <i>S. whitneyi</i> , n. s., Meek, 1877, pl. x, figs. 4, 4 a-c .....                          | 102     |
| <i>Mytilidae.</i>                                                                            |         |
| † <i>Modiomorpha</i> , H. & W. ....                                                          |         |
| <i>M. † ovata</i> , n. s., Meek, 1877, pl. x, figs. 1, 1 a .....                             | 103     |
| <i>M. † lata</i> , n. s., Meek, 1877, pl. x, fig. 2 .....                                    | 103-104 |
| <i>Cephalopoda.</i>                                                                          |         |
| <i>Orthoceratitidae.</i>                                                                     |         |
| <i>Orthoceras</i> , Auct. ....                                                               | 104     |
| <i>O. blakei</i> , (Gabb) 1864, pl. x, fig. 11 .....                                         | 104-105 |
| AMMONITOID FORMS OF THE UPPER TRIAS OF NEVADA.                                               |         |
| <i>Olydonitidae</i> , n. f., Hyatt, 1877 .....                                               | 107     |
| † <i>Coruoceras</i> , n. g., Hyatt, 1877 .....                                               | 107-108 |
| <i>Olydonites</i> , Hauer .....                                                              | 108     |
| <i>O. leviorsatus</i> , Hauer, sp., 1860, pl. x, fig. 7 .....                                | 108-110 |
| <i>Trachyceratidae.</i>                                                                      |         |
| † <i>Gymnotoceras</i> , n. g., Hyatt, 1877 .....                                             | 110-111 |
| <i>G. rotelliforme</i> , n. s., Meek, 1877, pl. x, figs. 9, and 9 a .....                    | 111-113 |
| <i>G. blakei</i> , (Gabb) sp., 1864, pl. x, figs. 10, 10 a-c, and pl. xi, figs. 6, 6 a ..... | 113-116 |
| <i>Trachyceras</i> , Laube .....                                                             | 116     |
| <i>T. whitneyi</i> , (Gabb) sp., 1864, pl. xi, figs. 3, 3 a .....                            | 116-118 |
| <i>T. judicarium</i> , Muhlensovics, 1869, pl. xi, figs. 1, 1 a .....                        | 118     |
| <i>T. judicarium</i> , var. <i>subasperum</i> , Meek, 1877, pl. xi, figs. 2, 2 a and b ..... | 118-119 |
| <i>Acrotidae.</i>                                                                            |         |
| <i>Acrotex</i> , Suess .....                                                                 | 119-120 |
| <i>A. † perplanus</i> , n. s., Meek, 1877, pl. xi, figs. 7 and 7 a .....                     | 120-121 |
| <i>A. gabbi</i> , n. s., Meek, 1877, pl. x, figs. 6, 6 a and b .....                         | 121-123 |
| <i>Physanoidae.</i>                                                                          |         |
| † <i>Aorochordoceras</i> , n. g., Hyatt, 1877 .....                                          | 124     |
| † <i>Ayatti</i> , n. s., Meek, 1877, pl. xi, figs. 5 and 5 a .....                           | 124-125 |
| <i>Eutomoceras</i> , n. g., Hyatt, 1877 .....                                                | 125     |
| <i>E. laubei</i> , n. s., Meek, 1877, pl. 10, figs. 8, 8 a .....                             | 125-126 |
| <i>Eudiacoceras</i> , n. g., Hyatt, 1877 .....                                               | 126     |
| <i>E. gabbi</i> , n. s., Meek, 1877, pl. xi, figs. 3 and 3 a .....                           | 126-129 |
| JURASSIC SPECIES.                                                                            |         |
| <i>Mollusca.</i>                                                                             |         |
| <i>Lamellibranchiata.</i>                                                                    |         |
| <i>Limidae.</i>                                                                              |         |
| <i>Lima</i> , Brugulère .....                                                                | 129     |
| <i>L. (Limatula) orata</i> , n. s., Meek, 1877, pl. xii, fig. 3 .....                        | 129     |

† *caput*, a helmet; *aspa*, a horn.

† *acropexipis*, a wart; *aspa*, a horn.

*tympus*, naked; *tyros*, back; *aspa*, a horn.



|                                                                                          | Page.   |
|------------------------------------------------------------------------------------------|---------|
| <b>Pinnidae.</b>                                                                         |         |
| <i>Pinna</i> , Linnæus .....                                                             | 131     |
| <i>P. kingii</i> , n. s., Meek, 1877, pl. xii, figs. 9, 9 a .....                        | 131-133 |
| <b>Mytilidae.</b>                                                                        |         |
| <i>Ysella</i> , Scopoli .....                                                            | 133     |
| <i>Y. scalprum</i> , var. <i>isonema</i> , Meek, 1877, pl. xii, figs. 4, 4 a .....       | 132-133 |
| <b>Trigoniidae.</b>                                                                      |         |
| <i>Myophoria</i> , Bronn .....                                                           | 133     |
| <i>M. lineata</i> , Münster? 1834, pl. xii, figs. 3, 3 a .....                           | 133-134 |
| <b>Arceidae.</b>                                                                         |         |
| <i>Ocullella</i> , Lamarck .....                                                         | 134     |
| <i>O. haguet</i> , n. s., Meek, 1877, pl. xii, figs. 1, 1 a, b .....                     | 134-135 |
| <b>Anatinidae.</b>                                                                       |         |
| <i>Myacites</i> , Auct. ....                                                             | 136     |
| <i>M. (Pleuromya) subcompressa</i> , Meek, 1873, pl. xii, figs. 6, 6 a .....             | 136-137 |
| <i>M. inconspicuus</i> , n. s., Meek, 1877, pl. xii, fig. 10 .....                       | 137     |
| <i>M. (Pleuromya) weberensis</i> , n. s., Meek, 1877, pl. xii, figs. 11, 11 a .....      | 137-138 |
| <b>Cephalopoda.</b>                                                                      |         |
| <b>Belemnitidae.</b>                                                                     |         |
| <i>Belemnites</i> , Auct. ....                                                           | 138     |
| <i>B. nevadensis</i> , n. s., Meek, 1877, pl. xii, figs. 7, 7 a, b (and 8 a, b f) .....  | 138-139 |
| CRETACEOUS FOSSILS.                                                                      |         |
| <b>Mollusca.</b>                                                                         |         |
| <b>Ostreidae.</b>                                                                        |         |
| <i>Ostrea</i> , Linn .....                                                               | 140     |
| <i>Ostrea</i> , undt. sp., Meek, 1877, pl. xv, figs. 10, 10 a-c .....                    | 140-141 |
| <b>Anomiidae.</b>                                                                        |         |
| <i>Anomia ratiiformis</i> , n. s., Meek, 1877, fig. 1, p. 141 .....                      | 141     |
| <b>Pteridae.</b>                                                                         |         |
| <i>Inoceramus</i> , Sowerby .....                                                        | 142     |
| <i>I. simpsoni</i> , Meek, 1880, pl. xiii, fig. 3 .....                                  | 142-143 |
| <i>I. problematicus</i> , Schlot? 1820, pl. xiii, figs. 2 and 2 a .....                  | 143-144 |
| <i>Inoceramus</i> , sp. undt., Meek, 1877, pl. xiii, figs. 4, 4 a .....                  | 144     |
| <i>I. erectus</i> , n. s., Meek, 1877, pl. xiii, figs. 1, 1 a, and pl. xiv, fig. 3 ..... | 145     |
| <i>I. deformis</i> , Meek, 1872, pl. xiv, figs. 4, 4 a .....                             | 146-148 |
| <b>Arceidae.</b>                                                                         |         |
| <i>Ocullella</i> , Lamarck .....                                                         | 148     |
| <i>O. (Trigonarca?) obliqua</i> , n. s., Meek, 1877, pl. xiv, figs. 1, 1 a-b .....       | 148-149 |
| <i>Azinæa</i> , Poli .....                                                               | 149     |
| <i>A. wyomingensis</i> , n. s., Meek, 1877, figs. 2 and 3, p. 150 .....                  | 149-150 |
| <b>Corbulidae.</b>                                                                       |         |
| <i>Corbula</i> , Bruguière .....                                                         | 150     |
| <i>Corbula</i> , undt. sp., Meek, 1877, pl. xiv, fig. 2 .....                            | 150-151 |
| <b>Cardiidae.</b>                                                                        |         |
| <i>Cardium</i> , Linnæus .....                                                           | 151     |
| <i>C. curtum</i> , M. & H.? 1861, pl. xv, fig. 3 (not 3 a) .....                         | 151-152 |
| <i>C. subcurtum</i> , Meek, 1873, pl. xv, fig. 3 a (not 3) .....                         | 152-153 |
| <b>Macluridae.</b>                                                                       |         |
| <i>Maclura</i> , Linnæus .....                                                           | 153     |
| <i>M. ? emmonsi</i> , n. s., Meek, 1877, pl. xv, fig. 8 .....                            | 153-154 |
| <i>M. (Trigonella) ? arenaria</i> , n. s., Meek, 1877, pl. xiv, fig. 5 .....             | 154-155 |
| <i>M. (Cymbophora) ? utahensis</i> , n. s., Meek, 1877, pl. xv, figs. 9, 9 a, b .....    | 155-156 |
| <b>Tellinidae.</b>                                                                       |         |
| <i>Tellina</i> , Linnæus .....                                                           | 156     |
| <i>T. ? isonema</i> , n. s., Meek, 1877, pl. xv, fig. 6 .....                            | 156-157 |
| <i>T. modesta</i> , n. s., Meek, 1877, pl. xv, figs. 4-5 .....                           | 157-158 |
| <b>Veneridae.</b>                                                                        |         |
| <i>Cyprineria</i> , Conrad .....                                                         | 158     |
| <i>C. ? subulata</i> , Meek, 1873, pl. xv, fig. 7 .....                                  | 158-159 |
| <b>Gastropoda.</b>                                                                       |         |
| <b>Naticidae.</b>                                                                        |         |
| <i>Gyrodæ</i> , Conrad .....                                                             | 159     |
| <i>G. depressa</i> , n. s., Meek, 1877, pl. xv, figs. 1, 1 a .....                       | 159-160 |
| <b>Aporrhaidæ.</b>                                                                       |         |
| <i>Anchura</i> , Conrad .....                                                            | 160     |
| <i>A. ? fusiformis</i> , n. s., Meek, 1877, pl. xv, figs. 2, 2 a .....                   | 160-161 |

|                                                                                              | Page    |
|----------------------------------------------------------------------------------------------|---------|
| <i>Siphonariidae</i> .                                                                       |         |
| † <i>Anisomylon</i> , M. & H. ....                                                           | 162     |
| <i>A. sezzulcatus</i> , M. & H. 1856, figs. 4 and 5, p. 162 .....                            | 162     |
| FOSSILS OF THE BEAR RIVER FRESH OR BRACKISH WATER BEDS.                                      |         |
| <i>Mollusca</i> .                                                                            |         |
| <i>Lamellibranchiata</i> .                                                                   |         |
| <i>Unionidae</i> .                                                                           |         |
| <i>Unio</i> , Retzius .....                                                                  | 164     |
| <i>U. retusus</i> , Meek, 1860, pl. xvi, figs. 5, 5 a-c. ....                                | 164-165 |
| <i>U. belliplicatus</i> , Meek, 1870, pl. xvi, figs. 4, 4 a .....                            | 165-167 |
| <i>Cyrenidae</i> .                                                                           |         |
| <i>Orbicula</i> , Benson. ....                                                               | 167     |
| <i>C. (Veloritina) durkei</i> , Meek, 1870, pl. xvi, figs. 6 a-g .....                       | 167-170 |
| <i>Corbulidae</i> .                                                                          |         |
| <i>Corbula</i> , Brug. ....                                                                  | 170     |
| <i>C. (Anisorhynchus) pyriformis</i> , Meek, 1860, pl. xvii, figs. 2, 2 a-d. ....            | 170-174 |
| <i>C. (Anisorhynchus) engelmanni</i> , Meek, 1860, pl. xvii, figs. 1, 1 a .....              | 174-175 |
| <i>Gastropoda</i> .                                                                          |         |
| <i>Auriculidae</i> .                                                                         |         |
| <i>Rhytiphorus</i> , Meek, 1873 .....                                                        | 175     |
| <i>R. priscus</i> , Meek, 1860, pl. xvii, figs. 6 and 6 a .....                              | 175-176 |
| <i>Ceriphasiidae</i> .                                                                       |         |
| <i>Pyrgulifera humerosa</i> , Meek, 1860, pl. xvii, figs. 19, 19 a, and fig. 6, p. 177. .... | 176-178 |
| <i>Viviparidae</i> .                                                                         |         |
| <i>Viviparus</i> , Montfort .....                                                            | 178     |
| <i>V. conradi</i> , M. & H., 1856, pl. xvii, figs. 18, 18 a .....                            | 178-179 |
| <i>Oampeloma</i> , Rafinesque .....                                                          | 179     |
| <i>C. macrospira</i> , Meek 1872, pl. xvii, figs. 17 a, b .....                              | 179-181 |
| <i>Oampeloma</i> (undt. sp.), Meek, 1877, pl. xvii, figs. 15 a, b, and fig. 16 a-c. ....     | 181     |
| <i>Limnæidae</i> .                                                                           |         |
| <i>Limnæa</i> , Lamarck .....                                                                | 181     |
| <i>L. (Limnophya) nitidula</i> , Meek, 1860, pl. xvii, figs. 5, 5 a .....                    | 181-182 |
| SPECIES OF UNDOUBTED TERTIARY AGE.                                                           |         |
| <i>Mollusca</i> .                                                                            |         |
| <i>Lamellibranchiata</i> .                                                                   |         |
| <i>Cyrenidae</i> .                                                                           |         |
| <i>Sphærium</i> , Scopoli.                                                                   |         |
| <i>S. rugosum</i> , Meek, 1870, pl. xvi, figs. 2, 2 a, b .....                               | 182-183 |
| <i>S. f. idahoense</i> , Meek, 1870, pl. xvi, fig. 1, 1 a .....                              | 183-184 |
| <i>Unionidae</i> .                                                                           |         |
| <i>Unio</i> , Retzius .....                                                                  | 184     |
| <i>U. haydeni</i> , Meek, 1860, pl. xvi, figs. 3, 3 a, b .....                               | 184-185 |
| <i>Gastropoda</i> .                                                                          |         |
| <i>Limnæidae</i> .                                                                           |         |
| <i>Anodonta</i> , Geoffroy .....                                                             | 186     |
| <i>A. undulatus</i> , Meek, 1870, pl. xvii, figs. 12 a, b .....                              | 186     |
| <i>Carinifera</i> , Blaney .....                                                             | 187     |
| <i>Subgenus Vorticifera</i> , Meek, 1870 .....                                               | 187     |
| <i>(Vorticifera) binneyi</i> , Meek, 1870, pl. xvii, figs. 11, 11 a .....                    | 187-188 |
| <i>(Vorticifera) tryoni</i> , Meek, 1870, pl. xvii, figs. 10, 10 a-c .....                   | 188-189 |
| <i>Pinnorbis</i> , Quettard .....                                                            | 189     |
| <i>P. spectabilis</i> , Meek, 1860, pl. xvii, figs. 13, 13 a-f .....                         | 189     |
| <i>P. spectabilis</i> var. <i>utahensis</i> , Meek, 1860, pl. xvii, figs. 14, 14 a-c .....   | 190-191 |
| <i>Limnæa</i> , Lamarck .....                                                                | 191     |
| <i>L. (Limnophya) retusa</i> , Meek, 1860, pl. xvii, figs. 4, 4 a, b .....                   | 191     |
| <i>L. nitida</i> , Meek, 1860, pl. xvii, figs. 3, 3 a .....                                  | 191-192 |
| <i>L. (Polyrhya) kingii</i> , n. n., Meek, 1877, figs. 6 and 7, p. 192 .....                 | 192-193 |
| <i>Ceriphasiidae</i> .                                                                       |         |
| <i>Pyrgulifera</i> , Meek .....                                                              | 198     |
| <i>P. atropurpurea</i> , Meek, 1860, pl. xvii, figs. 7, 7 a-d .....                          | 193-195 |
| <i>Melonitidae</i> .                                                                         |         |
| <i>Melonites</i> , Anst .....                                                                | 195     |
| <i>M. subulpilis</i> , Meek, 1870, pl. xvii, fig. 8 .....                                    | 195-196 |
| <i>M. f. subulpilis</i> , Meek, 1870, pl. xvii, fig. 9 .....                                 | 196-197 |

---

## PART II.

---

THE PUBLISHED WRITINGS OF CHARLES ABIATHAR WHITE, 1860-1884.

---





## II.—THE PUBLISHED WRITINGS OF CHARLES ABIATHAR WHITE, A. M., M. D.

---

This catalogue is intended to embrace the titles and place of publication, not only of all the scientific writings of Dr. White, but his reviews of the writings of other authors, and his more popular articles also. In only a few instances however, are newspaper articles, of which he has written many, noticed on the following pages; but the intention has been to make entry of all his short published notes which contain any expression of his views upon scientific subjects, as well as of his more elaborate works. The annotations which accompany this catalogue are made up mainly from data furnished by the author of the works, and all expressions of opinion upon geologic and paleontologic subjects contained in them should be regarded as his own.

Charles A. White was born in North Dighton, Bristol County, Massachusetts, on January 26, 1826. He has held the following official positions in education and science, to which subjects most of his writings pertain: State Geologist of Iowa, by legislative appointment, from 1866 to 1869, inclusive; Professor of Natural History in the Iowa State University, from 1867 to 1873; Professor of Natural History in Bowdoin College, from 1873 to 1875; Paleontologist to the U. S. Geographical and Geological Surveys West of the 100th Meridian, in charge of Lieut. George M. Wheeler, in 1874; Geologist and Paleontologist to the U. S. Geological Survey of the Territories, in charge of Maj. J. W. Powell, in 1875; Geologist and Paleontologist to the U. S. Geological Survey of the Territories, in charge of Dr. F. V. Hayden, from 1876 to 1879; in charge of paleontological collections in the U. S. National Museum from 1879 to 1882; detailed in 1881 to act as chief of the Artesian Wells Commission upon the Great Plains, under the auspices of the U. S. Agricultural Department; Geologist to the U. S. Geological Survey in 1882; Paleontologist to the U. S. Geological Survey in 1883, which position he now holds, together with honorary curatorship in the U. S. National Museum; President of the Biological Society of Washington for the years 1883 and 1884.

A partial bibliography of Dr. White appeared in the "American Field" for March and April, 1885; this is by Charles Aldrich.

## 1.

HITE, C. A. Observations upon the Geology and Paleontology of Burlington, Iowa, and its Vicinity. <Bost. Jour. Nat. Hist., (Bost. Soc. Nat. Hist.) vol. vii, pp. 209-235. Boston, 1861.

me. Boston, 1860, 8vo., p. 209-235. Fifty separates printed without title-page, covers, or repaging.

The 50 separates appeared at the date mentioned, but Part II of vol. vii, according to a note inserted in it, did not appear until December, 1862, although it bears the imprint 1861.

This paper is divided into two parts; in the first, details of local geology are given, and attention is called to the fact that in this locality the change from Devonian to Carboniferous took place so gradually as to render it impossible to point out the exact line where one ends and the other begins. A section of the rocks at Burlington is given with a table showing the vertical range of shells, and a list of the genera discovered in the rocks at Burlington, showing the different beds in which they have been recognized.

The second part contains descriptions of seven new species of *Brachiopoda* from the Chemung rocks at Burlington, Iowa.

|                                                               | Page.   |
|---------------------------------------------------------------|---------|
| <i>Rhynchonella pustulosa</i> , n. s., White, 1860 .....      | 226     |
| <i>Nucleospira barrisi</i> , n. s., White, 1860 .....         | 227-228 |
| <i>Terebratula burlingtonensis</i> , n. s., White, 1860 ..... | 228-229 |
| <i>Athyris crassicardialis</i> , n. s., White, 1860 .....     | 229-230 |
| <i>Productus laevicostus</i> , n. s. White, 1860 .....        | 230-231 |
| <i>Orthis thiemek</i> , n. s., White, 1860 .....              | 231-232 |
| <i>Spirifer solidirostris</i> , n. s., White, 1860 .....      | 232-233 |

This part also contains a list of described fossils recognized in the Burlington beds. 233-235

## 2.

HITE, C. A., and WHITFIELD, R. P. Observations upon the Rocks of the Mississippi Valley which have been referred to the Chemung Group of New York, together with Descriptions of New Species of Fossils from the same horizon at Burlington, Iowa. <Proc. Bost. Soc. Nat. Hist., vol. viii, pp. 289-306. Boston, 1862.

me. Boston, 1862, 8vo., pp. 289-306. Fifty separates printed without title-page, covers, or repaging.

Thirty-one species of Lower Carboniferous fossils are described in this paper.

## Description of new species.

|                                                                         | Page.   |
|-------------------------------------------------------------------------|---------|
| <i>Brachiopoda</i> .                                                    |         |
| <i>Orthis</i> , Dalman .....                                            | 282     |
| <i>O. subelliptica</i> , n. s., White & Whitfield, 1862 .....           | 282-283 |
| <i>Streptorhynchus</i> , King .....                                     | 283     |
| <i>S. inflatus</i> , n. s., White & Whitfield, 1862 .....               | 283     |
| <i>Spirifer</i> , Sowerby .....                                         | 283     |
| <i>S. hirtus</i> , n. s., White & Whitfield, 1862 .....                 | 283-284 |
| <i>Retzia</i> , King .....                                              | 284     |
| <i>R. scyphicata</i> , n. s., White & Whitfield, 1862 .....             | 284     |
| <i>Rhynchonella</i> , Fischer .....                                     | 284     |
| <i>R. opposita</i> , n. s., White & Whitfield, 1862 .....               | 284-285 |
| <i>Pentamerus</i> , Sowerby .....                                       | 285     |
| <i>P. lenticularis</i> , n. s., White & Whitfield, 1862 .....           | 285     |
| <i>Clonchifera</i> .                                                    |         |
| <i>Aviculopecten</i> , McCoy .....                                      | 285     |
| <i>A. limaformis</i> , n. s., White & Whitfield, 1862 .....             | 285-286 |
| <i>A. nudocostatus</i> , n. s., White & Whitfield, 1862 .....           | 286     |
| <i>Mytilus</i> , Linn .....                                             | 286     |
| <i>M. febricitans</i> , n. s., White & Whitfield, 1862 .....            | 286-287 |
| <i>M. occidentalis</i> , n. s., White & Whitfield, 1862 .....           | 287     |
| <i>Subgenus Orthonota</i> , Conrad .....                                | 287     |
| <i>M. (Orthonota) ventricosa</i> , n. s., White & Whitfield, 1862 ..... | 287-288 |
| <i>Nucula</i> , Lamarck .....                                           | 288     |
| <i>N. lowensis</i> , n. s., White & Whitfield, 1862 .....               | 288     |
| <i>Leda</i> , Schum .....                                               | 288     |
| <i>L. barrisi</i> , n. s., White & Whitfield, 1862 .....                | 288     |



|                                                                           | Page.   |
|---------------------------------------------------------------------------|---------|
| <i>Macrodon</i> , Lycett. ....                                            | 298     |
| <i>M. parvus</i> , n. s., White & Whitfield, 1862. ....                   | 299     |
| <i>Conocardium</i> , Bronn. ....                                          | 299     |
| <i>C. pulcellum</i> , n. s., White & Whitfield, 1862. ....                | 299     |
| <i>Cypriocardia?</i> <i>rigida</i> , n. s., White & Whitfield, 1862. .... | 300     |
| <i>Cypriocardella</i> , Hall. ....                                        | 300     |
| <i>C. quadrata</i> , n. s., White & Whitfield, 1862. ....                 | 300-301 |
| <i>Edmondia</i> , Koninck. ....                                           | 301     |
| <i>E. burlingtonensis</i> , n. s., White & Whitfield, 1862. ....          | 301     |
| <i>Gasteropoda</i> . ....                                                 |         |
| <i>Euomphalus</i> , Sowerby. ....                                         | 301     |
| <i>E. ammon</i> , n. s., White & Whitfield, 1862. ....                    | 301     |
| <i>Platyceras</i> , Conrad. ....                                          | 302     |
| <i>P. parahum</i> , n. s., White & Whitfield, 1862. ....                  | 302     |
| <i>P. bivalve</i> , n. s., White & Whitfield, 1862. ....                  | 302     |
| <i>Pleurotomaria</i> , DeFrance. ....                                     | 302     |
| <i>P. mississippiensis</i> , n. s., White & Whitfield, 1862. ....         | 302     |
| <i>Murchisonia</i> , D'Archiac. ....                                      | 303     |
| <i>M. ? prolata</i> , n. s., White & Whitfield, 1862. ....                | 303     |
| <i>Porcellia</i> , Léveillé. ....                                         | 303     |
| <i>P. crassinoda</i> , n. s., White & Whitfield, 1862. ....               | 303     |
| <i>Bellerophon</i> , Montfort. ....                                       | 304     |
| <i>B. vinculatus</i> , n. s., White & Whitfield, 1862. ....               | 304     |
| <i>B. perelegans</i> , n. s., White & Whitfield, 1862. ....               | 304     |
| <i>B. bilabiatus</i> , n. s., White & Whitfield, 1862. ....               | 304-305 |
| <i>Cephalopoda</i> . ....                                                 |         |
| <i>Goniatites</i> , De Haan. ....                                         | 305     |
| <i>G. optimus</i> , n. s., White & Whitfield, 1862. ....                  | 305     |
| <i>Radiata</i> . ....                                                     |         |
| <i>Lophophyllum</i> , Edwards & Haime. ....                               | 305     |
| <i>L. calceola</i> , n. s., White & Whitfield, 1862. ....                 | 305-306 |
| <i>Zaphrentis</i> , Rafinesque. ....                                      | 306     |
| <i>Z. acutus</i> , n. s., White & Whitfield, 1862. ....                   | 306     |
| <i>Favosites</i> , Lam. ....                                              | 306     |
| <i>F.</i> —[Whitfield]. ....                                              | 306     |

3.

HITE, C. A. Observations on the Summit Structure of *Pentremites*, the Structure and Arrangement of certain Parts of Crinoids, and Descriptions of New Species from the Carboniferous Rocks of Burlington, Iowa. < Boston Jour. Nat. Hist. (Boston Soc. Nat. Hist.), vol. vii, pp. 481-506. Boston, 1863.  
ne. Boston, 1863. 8vo, pp. 581-506. Fifty separates printed without title-page, covers, or repaging.

The summit structure of *Pentremites norwoodi*, *P. stelliformis*, *P. lineatus*, and *P. elongatus* is noticed. Instances of the recuperative power of Crinoids are also given. The genus *Calioerinus* is proposed, and five species of Crinoids are described.

Some observations on certain modifications of the structure of the proboscis of *Actinocrinus* are given, p. 489-491.

|                                                  | Page.   |
|--------------------------------------------------|---------|
| <i>Calioerinus</i> *, n. g., White, 1863. ....   | 490-501 |
| <i>C. subepinosus</i> , n. s., White, 1863. .... | 501-502 |
| <i>Platycrinus</i> , Miller. ....                | 502     |
| <i>P. verrucosus</i> , n. s., White, 1863. ....  | 502-503 |
| <i>P. incomptus</i> , n. s., White, 1863. ....   | 503-504 |
| <i>Oyathocrinus</i> , Miller. ....               | 504     |
| <i>C. lamellosus</i> , n. s., White, 1863. ....  | 504-505 |
| <i>Scaphiocrinus</i> , Hall. ....                | 505     |
| <i>S. rusticellus</i> , n. s., White, 1863. .... | 505-506 |

\* Κοιλία, venter; κρίνον, liliūm.

## 4.

WHITE, C. A. Descriptions of new species of Fossils from the Devonian and Carboniferous Rocks of the Mississippi Valley. <Proc. Boston Soc. Nat. Hist., vol. ix, pp. 8-33. Boston, 1865.

Same. Boston, 1862. 8vo, pp. 2-33. Fifty separates printed without title-page, covers, or repaging.

Forty-five species and two varieties of fossils are described, and the genera *Belemnoerinus* and *Acanthodes* are proposed. The author now regards the latter as identical with *Eumicrotis*, Hall.

## Echinodermata.

Page.

## Crinoides.

|                                                                           |       |
|---------------------------------------------------------------------------|-------|
| <i>Cyathocrinus</i> , Miller .....                                        | 8     |
| <i>C. rigidus</i> , n. s., White, 1862 .....                              | 8     |
| <i>C. kelloggi</i> , n. s., White, 1862 .....                             | 10    |
| <i>P. teriocrinus</i> , Miller .....                                      | 9     |
| <i>P. obuncus</i> , n. s., White, 1862 .....                              | 9     |
| <i>P. salignoides</i> , n. s., White, 1862 .....                          | 10    |
| <i>P. buragformis</i> , n. s., White, 1862 .....                          | 10-11 |
| <i>Bursocrinus</i> , Meek & Worthen .....                                 | 11    |
| <i>B. confirmatus</i> , n. s., White, 1862 .....                          | 11    |
| <i>Zocrinus</i> , Troost .....                                            | 11    |
| <i>Z. perangulatus</i> , n. s., White, 1862 .....                         | 11-12 |
| <i>Z. sacculus</i> , n. s., White, 1862 .....                             | 12-13 |
| <i>Z. sacculus</i> var. <i>concinuus</i> , White, 1862 .....              | 13    |
| * <i>Belemnoerinus</i> , n. g., White, 1862 .....                         | 14    |
| <i>B. typus</i> , n. s., White, 1862, figs. 1 and 2, p. 13. ....          | 14-15 |
| <i>Actinocrinus</i> , Miller .....                                        | 15    |
| <i>A. quadripinus</i> , n. s., White, 1862 .....                          | 15    |
| <i>A. wachsmuthi</i> , n. s., White, 1862 .....                           | 15-16 |
| <i>A. nashvilli</i> , Troost, var. <i>substrictus</i> , White, 1862. .... | 16    |
| <i>Megistocrinus</i> , Owen & Shumard .....                               | 16    |
| <i>M. plenus</i> , n. s., White, 1862 .....                               | 16-17 |
| <i>M. crassus</i> , n. s., White, 1862 .....                              | 17    |
| <i>Platycrinus</i> , Miller .....                                         | 17    |
| <i>P. pleurocimenus</i> , n. s., White, 1862 .....                        | 17-18 |
| <i>P. quinquenodus</i> , n. s., White, 1862 .....                         | 18-19 |
| <i>Dichocrinus</i> , Munster .....                                        | 19    |
| <i>D. angustus</i> , n. s., White, 1862 .....                             | 19    |
| <i>D. crassilestus</i> , n. s., White, 1862 .....                         | 19-20 |
| <i>Pentremites</i> , Say .....                                            | 20    |
| <i>P. sirius</i> , n. s., White, 1862, fig. 3, p. 20 .....                | 20-21 |

## Mollusca.

## Gastropoda.

|                                                   |       |
|---------------------------------------------------|-------|
| <i>Parcellia</i> , Léveillé .....                 | 21    |
| <i>P. obliquinoda</i> , n. s., White, 1862 .....  | 21    |
| <i>Bellerophon</i> , Montfort .....               | 21    |
| <i>B. pannus</i> , n. s., White, 1862 .....       | 21    |
| <i>B. scriptiferus</i> , n. s., White, 1862 ..... | 21-22 |
| <i>Eumphalus</i> , Sowerby .....                  | 22    |
| <i>E. roberti</i> , n. s., White, 1862 .....      | 22    |

## Pteropoda.

|                                             |       |
|---------------------------------------------|-------|
| <i>Cynularia</i> , Miller .....             | 22    |
| <i>C. byblis</i> , n. s., White, 1862 ..... | 22    |
| <i>C. riccia</i> , n. s., White, 1862 ..... | 22-23 |

## Brachiopoda.

|                                                                |       |
|----------------------------------------------------------------|-------|
| <i>Rhynchonella</i> , Fischer .....                            | 23    |
| <i>R. caput testudinis</i> , n. s., White, 1862 .....          | 23    |
| <i>R. ottumara</i> , n. s., White, 1862 .....                  | 23-24 |
| <i>Spirifer</i> , Sowerby .....                                | 24    |
| <i>S. planus ceruus</i> , n. s., White, 1862 .....             | 24    |
| Observations on the genus <i>Spiriferina</i> , d'Orbigny. .... | 24-25 |

\* *Belemnos*, a dart; *spinosus*, a lily.



|                                                                            | Page. |
|----------------------------------------------------------------------------|-------|
| <i>S. f. subtexia</i> , n. s., White, 1862 .....                           | 25    |
| <i>Cyrtia</i> , Dalman .....                                               | 25    |
| <i>C. curvilineata</i> , n. s., White, 1862 .....                          | 25-26 |
| <i>Ambocelia</i> , Hall .....                                              | 26    |
| <i>A. (Spirifer?) minuta</i> , n. s., White, 1862 .....                    | 26    |
| * <i>Acambona</i> , n. g., White, 1872 .....                               | 27    |
| <i>A. prima</i> , n. s., White, 1862, figs. 1 & 2, p. 27 .....             | 27-28 |
| <i>Retzia</i> , King, <i>Acambona</i> , White .....                        | 28    |
| <i>R. (Acambona?) altirostris</i> , n. s., White, 1862 .....               | 28    |
| <i>Streptorhynchus</i> , King .....                                        | 28    |
| <i>S. lens</i> , n. s., White, 1862 .....                                  | 28-29 |
| <i>Productus</i> , Sowerby .....                                           | 29    |
| <i>P. viminalis</i> , n. s., White, 1862 .....                             | 29    |
| <i>Chonetes</i> , Fischer .....                                            | 29    |
| <i>C. geniculata</i> , n. s., White, 1862 .....                            | 29    |
| <i>Crania</i> , Retzius .....                                              | 29    |
| <i>C. sheldoni</i> , n. s., White, 1862 .....                              | 29-30 |
| <i>C. reposita</i> , n. s., White, 1862 .....                              | 30    |
| <i>Discina</i> , Lamarck .....                                             | 30    |
| <i>D. capax</i> , n. s., White, 1862 .....                                 | 30    |
| <i>Lingula</i> , Bruguière .....                                           | 30    |
| <i>L. halli</i> , n. s., White, 1862 .....                                 | 30    |
| <i>Conchifera.</i>                                                         |       |
| <i>Aviculopecten</i> , McCoy .....                                         | 31    |
| <i>A. gradocostus</i> , n. s., White, 1862 .....                           | 31    |
| <i>Cardiomorpha</i> , de Koninck, <i>Cardiopsis</i> , Meek & Worthen ..... | 31    |
| <i>C. (Cardiopsis?) parvirostris</i> , n. s., White, 1862 .....            | 31    |
| <i>Gervillia</i> , DeFrance .....                                          | 31    |
| <i>G. strigosa</i> , n. s., White, 1862 .....                              | 31    |
| <i>Zoophyta.</i>                                                           |       |
| <i>Zaphrentis</i> , Rafinesque et Clifford .....                           | 31    |
| <i>Z. elliptica</i> , n. s., White, 1862 .....                             | 31-32 |
| <i>Z. glans</i> , n. s., White, 1862 .....                                 | 32    |
| <i>Syringopora</i> , Goldfuss .....                                        | 32    |
| <i>S. harveyi</i> , n. s., White, 1862 .....                               | 32    |
| <i>Striatopora</i> , Hall .....                                            | 32    |
| <i>S. carbonaria</i> , n. s., White, 1862 .....                            | 32    |
| <i>Nullipora?</i> <i>obtexa</i> , n. s., White, 1862 .....                 | 33    |

5.

ITE, C. A. Fœtal hydrocephalus. <Chicago Medical Journal, vol. xxii, pp. 55-57. Chicago, 1865.

A report of an obstetrical case in which the child's cranium was too much enlarged to pass through the pelvic arch, and the serum was drawn off by an operation *in utero*.

6.

ITE, C. A. Cerebro-spinal meningitis. <Chicago Medical Journal, vol. xxii, pp. 529-532. Chicago, 1865.

A report of a successful case, in which the application of dry heat to the extremities was a leading feature of the treatment.

7.

ITE, C. A. The Soils of Iowa and their origin. <Report of the Secretary of the Iowa State Agricultural Society for the year 1865. pp. 245-267. Des Moines, 1866.

A popular lecture, delivered before the Society September 29, 1865. Some of the views expressed in the lecture have since been much modified by the author.

\*ἀχρ, a point; ἀμβω, umbo.

## 8.

WHITE, C. A. Observations on the genus *Belemnocrinus*. <Proc. Boston Soc. Nat. Hist., vol. x, p. 180. Boston, 1866.

This note is merely a rectification of the generic formula of *Belemnocrinus* as it was originally published in volume ix.

## 9.

WHITE, C. A. First Annual Report of Progress, of Charles A. White, State Geologist. pp. 1-4. Des Moines, 1867.

Probably not over fifty copies of this report were printed in its original form. It was reprinted on pages 5 to 8 of the first and second annual reports, Des Moines, 1868. See entry No. 20.

## 10.

WHITE, C. A. and ST. JOHN, O. H. Preliminary notice of new genera and species of fossils. By C. A. White, M. D., State Geologist, and O. H. St. John, Assistant. [pp. 1-3.] Iowa City, May 8, 1867.

This small publication of only fifty copies was made by the Iowa State Geological Survey. Four species are described. The genus *Meckella* proposed, *Cryptacanthia* suggested; and the whole, together with other matter, was republished in Vol. I, Transactions of the Chicago Academy of Sciences. See entry No. 15.

*Protozoa*.

*Amphistegina*, White & St. John, 1867.

*Mollusca*.

*Aulosteges spondyliiformis*, n. s., White & St. John, 1867.

*Waldheimia compacta*, n. s., White & St. John, 1867.

*Beyrichia lithofactor*, n. s., White & St. John, 1867.

*Beyrichia lithofactor* var. *velata*, White & St. John, 1867.

*Meckella*, n. g., White & St. John, 1867.

## 11.

WHITE, C. A. Observations upon the Drift phenomena of Southwestern Iowa. <Amer. Jour. Sci., 2d ser., vol. xliii, pp. 301-305. New Haven, 1867.

Same. New Haven, 1867. 8vo., pp. 301-305. Twenty-five separates printed without covers, title-page, or repaging.

Mentions the occurrence of glacial striae upon rocks *in situ*.

## 12.

WHITE, C. A. A Sketch of the Geology of Southwestern Iowa. <Amer. Jour. Sci., 2d ser., vol. xliv, pp. 23-31. New Haven, 1867.

Same. New Haven, 1867. 8vo., pp. 23-31. Twenty-five separates printed without title-page, covers, or repaging.

It is shown that the limestones of the region discussed belong to the upper and not to the lower Carboniferous series, as had been supposed by some previous authors.

## 13.

WHITE, C. A. Drift phenomena in Southwestern Iowa. <Amer. Jour. Sci., 2d ser., vol. xliv, p. 119. New Haven, 1867.

This is an additional note to the article of the preceding entry, which was inadvertently omitted by the printer.

## 14.

WHITE, C. A. Exogenous leaves in the Cretaceous rocks of Iowa. <Amer. Jour. Sci., 2d ser., vol. xliv, p. 119. New Haven, 1867.

A note announcing the discovery of exogenous leaves, and showing that the "Nishnaboli sandstone" is identical with the Dakota group.



15.

WHITE, C. A., and ST. JOHN, O. H. Descriptions of new Subcarboniferous and Coal-Measure Fossils, collected upon the Geological Survey of Iowa, together with notice of new generic characters observed in two species of Brachiopoda. <Trans. Chicago Acad. Sci., vol. i, pp. 115-127, figs. 1-12. Chicago, 1867.

Same. Chicago, 1867. pp. 115-127. Fifty separates printed without title-page, covers, or repaging.

Fourteen species are described, four of which were previously described in the paper, entry No. 10. The genus *Tomoceras* is proposed, and the previously suggested genera *Meekella* and *Cryptacanthia* are proposed and illustrated.

Protozoa.

Page.

Polypi.

*Cyathophyllidae.*

|                                                         |         |
|---------------------------------------------------------|---------|
| <i>Azophyllum</i> , Edwards & Haime.....                | 115     |
| <i>A. rudis</i> , n. s., White & St. John, 1867.....    | 115-116 |
| <i>Amplexus</i> , Sowerby.....                          | 116     |
| <i>A. fragilis</i> , n. s., White & St. John, 1867..... | 116     |

*Orinoidea.*

|                                                                           |         |
|---------------------------------------------------------------------------|---------|
| <i>Hydreinocrinus</i> , De Koninck.....                                   | 117     |
| <i>H. verrucosus</i> , n. s., White & St. John, 1867, fig. 1, p. 117..... | 117-118 |

*Brachiopoda.*

*Oranidae.*

|                                                        |     |
|--------------------------------------------------------|-----|
| <i>Orania</i> , Retzius.....                           | 118 |
| <i>O. modesta</i> , n. s., White & St. John, 1867..... | 118 |

*Productidae.*

|                                                                                |     |
|--------------------------------------------------------------------------------|-----|
| <i>Aulosteges</i> , Helmersen.....                                             | 118 |
| <i>A. spondyliiformis</i> , n. s., White & St. John, 1867, fig. 2, p. 118..... | 118 |

*Terebratulidae.*

|                                                                                         |         |
|-----------------------------------------------------------------------------------------|---------|
| <i>Waldheimia</i> , King.....                                                           | 119     |
| <i>W. l. compacta</i> , White & St. John, 1867, fig. 3, p. 119.....                     | 119     |
| <i>Meekella</i> , White & St. John, 1867.....                                           | 120     |
| <i>M. striatocostata</i> , White & St. John, figs. 4 and 5, p. 120, fig. 6, p. 121..... | 120-122 |

*Pinnidae.*

|                                                                                  |         |
|----------------------------------------------------------------------------------|---------|
| <i>Pinna</i> , Linnæus.....                                                      | 122     |
| <i>P. hinrichsiana</i> , n. s., White & St. John, 1867, fig. 7, a b, p. 122..... | 122-123 |

*Gastropoda.*

*Atlantidae.*

|                                                                             |     |
|-----------------------------------------------------------------------------|-----|
| <i>Oyrtolites</i> , Conrad.....                                             | 123 |
| <i>O. l. gillianus</i> , n. s., White & St. John, 1867, fig. 8, p. 123..... | 123 |

*Cephalopoda.*

*Nautilidae.*

|                                                                                               |          |
|-----------------------------------------------------------------------------------------------|----------|
| <i>Nautilus divisus</i> , n. s., White & St. John, 1867, fig. 9, p. 124.....                  | 124      |
| <i>Nautilus (Cryptoceras) springeri</i> , n. s., White & St. John, 1867, fig. 10, p. 124..... | 124, 125 |

*Crustacea.*

*Opyridinidae.*

|                                                                               |          |
|-------------------------------------------------------------------------------|----------|
| <i>Beyrichia</i> , McCoy.....                                                 | 125      |
| <i>B. petrifactor</i> , n. s., White & St. John, 1867.....                    | 125      |
| <i>B. petrifactor</i> var. <i>velata</i> , White & St. John, 1867.....        | 126      |
| <i>B. foetidea</i> , n. s., White & St. John, 1867, fig. 11, a b, p. 126..... | 126, 127 |

*Oypridae.*

|                                                        |     |
|--------------------------------------------------------|-----|
| <i>Oythere</i> , Mueller.....                          | 127 |
| <i>O. simplex</i> , n. s., White & St. John, 1867..... | 127 |

16.

WHITE, C. A. Character of the Unconformability of the Iowa Coal-measures upon the Older Rocks. <Am. Jour. Sci., 2d ser., vol. xiv, pp. 331-334. New Haven, 1868.

Same. New Haven, 1868, 8vo., pp. 331-334. Twenty-five separates printed without title page, covers, or repaging.

17.

WHITE, C. A. On Coal in Nebraska, with reference to a paragraph in the Geological Report of Dr. Hayden. <Am. Jour. Sci., 2d ser., vol. xlv., pp. 399-400. New Haven, 1868.

The paragraph referred to is on page 125 of the report of the Commissioner of the General Land Office for the year 1867.

18.

WHITE, C. A. Note on the shell-structure of certain Naiades. <Am. Jour. Sci., 2d ser., vol. xlv., pp. 400-401. New Haven, 1868.

The outer prismatic layer of the shell is noticed as a family character, not as a new discovery, as was supposed by Meek.

19.

WHITE, C. A. Note on "Cone-in-cone." <Am. Jour. Sci., 2d ser., vol. xlv., pp. 401-402. New Haven, 1868.

20.

WHITE, C. A. First and Second Annual Report of Progress by the State Geologist, and the Assistant and Chemist; on the Geological Survey of the State of Iowa; together with the substance of Popular Letters contributed to the Newspapers of the State during the years 1866 and 1867, in accordance with law; also extracts originally contributed to Scientific Journals as a part of the work of the Survey. pp. 1-284. Des Moines, 1868.

The brief first annual report (Entry No. 9) is reprinted in this volume, upon pages 5-8.

21.

WHITE, C. A. Lakes of Iowa, Past and Present. <American Naturalist, vol. ii, pp. 143-155. Salem, 1868.

Same. Salem, 1868, pp. 143-155. Thirty separates printed without title-page, covers, or repaging.

The Drift lakes, including the so-called walled lakes, are described, and the origin of the "walls" explained. Also the Bluff deposit of the Missouri River valley is shown to be the deposit of an ancient lake.

22.

WHITE, C. A. The Iowa Drift. <American Naturalist, vol. ii, pp. 615-616. Salem, 1869.

The derivation of the drift material from the underlying rocks, by their disintegration and comminution, is shown.

23.

WHITE, C. A. A trip to the Great Red Pipestone Quarry. <American Naturalist, vol. ii, pp. 644-653. Salem, 1869.

Same. Salem, 1869, 8vo., pp. 644-653. Thirty separates printed without title-page, covers, or repaging.

The quarry, the region, and the formation which contains the pipestone, are described.

24.

WHITE, C. A. Are Unios sensitive to light? <Am. Jour. Sci., 2d ser., vol. xlvii, pp. 280-281. New Haven, 1869.

An experiment is described, showing that the sensitiveness which Unios manifest when the sun's rays are suddenly intercepted by an opaque body, is due to an interruption of light rays, and not heat rays.



25.

WHITE, C. A. Announcement of the Existence of Cretaceous Rocks in Guthrie County, Iowa <Proc. Amer. Ass. Adv. Sci., 17th Meeting. Chicago, 1868, vol. xvii, pp. 326-327. Cambridge, 1869.

26.

WHITE, C. A. Observation on the Red Quartzite Boulders of Western Iowa; and their original ledges of Red Quartzite in Iowa, Dakota, and Minnesota. <Proc. Amer. Ass. Adv. Sci., 17th Meeting. Chicago, 1868, vol. xvii, pp. 340-342. Cambridge, 1869.

Same. Cambridge, 1869, pp. 340-342. Thirty separates printed without title page, covers, or repaging.

27.

WHITE, C. A. Report on the Geological Survey of the State of Iowa, to the Thirteenth General Assembly, January, 1870, Containing results of Examinations and Observations made within the years 1866, 1867, 1868, and 1869. By Charles A. White, M. D., Geological Corps; Charles A. White, State Geologist; Orestes H. St. John, Assistant; Rush Emery, Chemist. Vols. I and II. Des Moines, 1870.

CONTENTS OF VOLUME I.

|                                                                                 | Page.   |
|---------------------------------------------------------------------------------|---------|
| Introduction, including popular explanation of geological subjects .....        | 7-27    |
| Part First: Physical Geography and Surface Geology; Four plates and two maps .. | 28-166  |
| Chapter I. Surface features .....                                               | 28-81   |
| Chapter II. Surface deposits .....                                              | 82-121  |
| Chapter III. Soils, &c .....                                                    | 122-138 |
| Chapter IV. Climate (by T. S. Parvin) .....                                     | 139-164 |
| Part Second: General Geology; Three plates and three sections. ....             | 165-294 |
| Chapter I. Azoic, Lower Silurian, Upper Silurian, and Devonian systems .....    | 167-188 |
| (Smithia [Pachyphyllum] woodmani [n. s., White, 1870] is described on p. 188.)  |         |
| Chapter II. Carboniferous system .....                                          | 189-230 |
| Chapter III. Carboniferous system continued .....                               | 231-263 |
| Chapter IV. Carboniferous system concluded .....                                | 264-284 |
| Chapter V. Cretaceous system .....                                              | 285-294 |
| Part Third: County and Regional Geology .....                                   | 295-381 |
| Chapter I. Geology of Southwestern Iowa; and one section .....                  | 296-381 |
| Glossary .....                                                                  | 383-386 |
| Index .....                                                                     | 387-391 |

CONTENTS OF VOLUME II.

|                                                                                                                                                               |         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Part First: County and Regional Geology .....                                                                                                                 | 1-274   |
| Chapter I. Geology of the Middle Region of Western Iowa and other counties (by O. H. St. John); with one plate and one section .....                          | 1-200   |
| Chapter II. Northwestern Iowa; One plate .....                                                                                                                | 201-232 |
| Chapter III. Middle Region of Northern Iowa .....                                                                                                             | 233-253 |
| Chapter IV. Geology of the Coal counties; One plate .....                                                                                                     | 254-274 |
| Part Second: Mineralogy, Lithology, and Chemistry .....                                                                                                       | 275-402 |
| Chapter I. Peat and Petroleum; One plate .....                                                                                                                | 275-292 |
| Chapter II. Gypsum and other sulphates of the Alkaline Earths .....                                                                                           | 293-306 |
| Chapter III. Building materials, metals, and miscellaneous substances .....                                                                                   | 307-342 |
| Chapter IV. Chemist's Report (by Rush Emery).                                                                                                                 |         |
| Section I. Rocks and minerals .....                                                                                                                           | 345-354 |
| Section II. Waters .....                                                                                                                                      | 354-357 |
| Section III. Coals .....                                                                                                                                      | 357-397 |
| Section IV. Peats .....                                                                                                                                       | 397-402 |
| Appendices:                                                                                                                                                   |         |
| Appendix A. Elevation in feet of points along the lines of Iowa railroads, both completed and projected (by the chief engineers of the respective roads ..... | 405-418 |
| Appendix B. Catalogue of the Birds of Iowa (by J. A. Allen) .....                                                                                             | 419-427 |
| Appendix C. Government Surveys of the Public Lands (by C. W. Irish) .....                                                                                     | 428-435 |
| One Geological map of the State, colored.                                                                                                                     |         |

## 28.

WHITE, C. A. Natural Science in our Common Schools. <Iowa School Journal, vol. xii, pp. 1-4. Des Moines, 1870.

Methods of interesting school children in natural history are suggested.

## 29.

WHITE, C. A. Kjøkkenmøddings in Iowa. <American Naturalist, vol. iii, pp. 54-55. Salem, 1870.

This is the first public announcement of the fact that the shell-heaps of the western rivers are true kjøkkenmøddings.

## 30.

WHITE, C. A. Lilies of the Rocks. <American Naturalist, vol. iii, pp. 553-554. Salem, 1870.

A review of part of an article by G. Hinrichs, in the August No., vol. iii, of the Naturalist entitled "Lilies of the Fields, of the Rocks, and the Clouds." This note is signed "Zoologus."

## 31.

WHITE, C. A. Prairie Fires. <American Naturalist, vol. v, pp. 68-70. Salem, 1871.

An incident of personal experience related.

## 32.

WHITE, C. A. Albino Flowers. <American Naturalist, vol. v, pp. 161-162. Salem, 1871.

It is observed that a certain cluster of the common field clover produced white flowers one year, and those of the ordinary red color the next. Also, that a specimen of white *Liatris* was observed, the latter being deemed important because the rose-red color is common to the whole genus.

## 33.

WHITE, C. A. [Remarks on the "Geological History of the Gulf of Mexico" by Prof. E. W. Hilgard.] <American Naturalist, vol. v, pp. 519-520. Salem, 1871.

These remarks were made before the American Association for the Advancement of Science, at the 20th (Indianapolis) meeting, 1871, with reference to the paper above cited.

## 34.

WHITE, C. A. [Remarks on the homologies of the Carpal and Tarsal bones in Birds.] <American Naturalist, vol. v, p. 525. Salem, 1871.

These remarks were made before the American Association for the Advancement of Science, 20th meeting (Indianapolis), with reference to a paper read by E. S. Morse, "On the Carpal and Tarsal bones of Birds."

## 35.

WHITE, C. A. Mammoth Cave. <University Reporter, [a college paper of the Iowa State University.] 4to. Vol. iv, pp. 81-83. Iowa City, 1872.

An account of a visit to Mammoth Cave, Kentucky, in company with the American Association for the Advancement of Science.

## 36.

WHITE, C. A. Manual of Physical Geography and Institutions of the State of Iowa. 4to. pp. 1-85, pls. i-iii and figs. Davenport, 1873.

This book was prepared for use in the schools of the State. It embraces an account of the history, constitution, and school laws of the State; its educational, charitable, and penal institutions, land surveys, elections, taxes, &c. In 1883 an edition was issued purporting to be the 15th and also to be revised, but it has never been revised by the author since the first edition.

37.

WHITE, C. A. Woodpeckers Tapping Sugar Trees. <American Naturalist, vol. vii, p. 496. Salem, 1873.

Woodpeckers were observed to peck holes in the bark of young and sound sugar maples, evidently to get the sap.

38.

WHITE, C. A. Kjækkenmøddings de l'Amérique du nord. <Congrès International d'Anthropologie et d'Archéologie. Préhistoriques; Compte rendu de la cinquième session à Bologne, 1871. pp. 379-389. Bologna (Italy), 1873.

Same. Bologna (Italy), 1873. 8vo, pp. 15. Thirty separates printed with title-page and repaging.

This paper embraces a general review of the subject of shell-heaps in North America as known up to that date.

39.

WHITE, C. A. On Spontaneous fission? in Zaphrentis. <Amer. Jour. Sc., 3d ser., vol. v., p. 72. New Haven, 1873.

A specimen of *Zaphrentis spinulifera*, Hall is described, which seemed to be a case of spontaneous fission. The author now thinks it probable that it was the result of a twin polyp. or that the fission took place at a very early stage in the formation of the corallite

40.

WHITE, C. A. On the Eastern Limit of Cretaceous Deposits in Iowa. <Proc. Amer. Ass. Adv. Sci. 21st meeting (Dubuque), 1872, vol. xxi, pp. 187-192. Cambridge, 1873.

Same. Cambridge, 1873. 8vo. pp. 187-192. Fifty separates printed without title-page, covers, or repaging.

The discovery is announced of Cretaceous fossils in the drift or glacier-disturbed Cretaceous deposits in Howard, Black Hawk, and Johnson Counties, Iowa; showing that the Cretaceous deposits once extended as far eastward as Eastern Iowa and Southeastern Minnesota.

41.

WHITE, C. A. The proposed genus *Anomalodonta* of Miller identical with the earlier *Megaptera* of Meek. <Amer. Jour. Sci., 3d ser., vol. viii, pp. 218-219. New Haven, 1874.

Meek's claim to priority is defended against that of Miller. The note bears only the initials of the author, "C. A. W."

42.

WHITE, C. A. Artificial Shell-heaps of Fresh-water Mollusks. <Proc. Amer. Ass. Adv. Sci., 22d meeting, Portland, 1873, pp. 133-137. Salem, 1874.

Same. Salem, 1874. 8vo. pp. 133-137. Fifty separates printed without title-page, covers, or repaging.

It is herein shown that the fresh-water mollusks were extensively used as food by the aboriginal inhabitants.

43.

WHITE, C. A. Preliminary Report upon Invertebrate Fossils collected by the Expeditions of 1871, 1872, and 1873, with Descriptions of New Species. <Engineer Department, U. S. Army. Geographical and Geological Explorations and Surveys west of the 100th meridian. First Lieut. George M. Wheeler, Corps of Engineers, in charge. pp. 1-27. Washington, 1874.

Thirty-nine species are described as new, and five others are noticed. They are all redescribed and figured in part I, vol. iv, Report upon Geographical and Geological Explorations and Surveys West of the 100th Meridian. See entry No. 48. *Anchura nuptialis* is a Cretaceous species, and herein wrongly referred to the Jurassic.

# BULLETIN NO. 30, UNITED STATES NATIONAL MUSEUM.

## LOWER SILURIAN

### PRIMORDIAL PERIOD.

#### Plants.

|                                                | Page |
|------------------------------------------------|------|
| <i>Oruziana</i> , d'Orbigny .....              | 1    |
| <i>O. linnarsoni</i> , n. s., White, 1874..... | 5    |
| <i>O. rustica</i> , n. s., White, 1874.....    | 1-4  |

#### Animalia.

##### Brachiopoda.

|                                                 |   |
|-------------------------------------------------|---|
| <i>Acrotreta</i> , Kutorga.....                 | 6 |
| <i>A. f. subridua</i> , n. s., White, 1874..... | 6 |
| <i>Trematis</i> , Sharpe.....                   | 6 |
| <i>T. pannulus</i> , n. s., White, 1874.....    | 6 |

##### Pteropoda.

|                                      |   |
|--------------------------------------|---|
| <i>Hyalolithes</i> , Eichwald.....   | 6 |
| <i>H. primordialis</i> , Hall f..... | 6 |

##### Crustacea.

|                                                  |     |
|--------------------------------------------------|-----|
| <i>Agnostus</i> , Bronghniart.....               | 7   |
| <i>A. interstricta</i> , n. s., White, 1874..... | 7   |
| <i>Olenellus</i> , Hall.....                     | 7   |
| <i>O. gilberti</i> , Meek MSS.....               | 7-8 |
| <i>O. powelli</i> , Meek MSS.....                | 8   |

### CANADIAN PERIOD.

##### Hydrozoa.

|                                             |   |
|---------------------------------------------|---|
| <i>Phyllograptus</i> , Hall.....            | 9 |
| <i>P. loringi</i> , n. s., White, 1874..... | 9 |

##### Brachiopoda.

|                                                  |      |
|--------------------------------------------------|------|
| <i>Acrotreta</i> , Kutorga.....                  | 9    |
| <i>A. pygidicula</i> , n. s., White, 1874.....   | 9    |
| <i>Lingula</i> , Bruguière.....                  | 9    |
| <i>L. f. manticula</i> , n. s., White, 1874..... | 9-10 |
| <i>Strophomena</i> , Rafinesque.....             | 10   |
| <i>S. fontinalis</i> , n. s., White, 1874.....   | 10   |

##### Gastropoda.

|                                                 |    |
|-------------------------------------------------|----|
| <i>Bellerophon</i> , Montfort.....              | 10 |
| <i>B. allegoricus</i> , n. s., White, 1874..... | 10 |

##### Cephalopoda.

|                                           |       |
|-------------------------------------------|-------|
| <i>Orthoceras</i> , Breynius.....         | 10    |
| <i>O. colon</i> , n. s., White, 1874..... | 10-11 |

##### Crustacea.

|                                                  |       |
|--------------------------------------------------|-------|
| <i>Leperditia</i> , Rouault.....                 | 11    |
| <i>L. biria</i> , n. s., White, 1874.....        | 11    |
| <i>Megalaspis</i> , Angelin.....                 | 11    |
| <i>M. bolemnurus</i> , n. s., White, 1874.....   | 11-12 |
| <i>Dicellograptus</i> , Owen.....                | 12    |
| <i>D. flagricaudus</i> , n. s., White, 1874..... | 12    |

### TRENTON PERIOD.

##### Hydrozoa.

|                                                                 |       |
|-----------------------------------------------------------------|-------|
| <i>Cratylolithus</i> , Linnaeus.....                            | 12    |
| <i>C. (Phyllograptus) hypniformis</i> , n. s., White, 1874..... | 12-13 |
| <i>C. quadrimucronatus</i> , Hall f.....                        | 13    |
| <i>C. (Chamaecraptus?) ramulus</i> , n. s., White, 1874.....    | 13    |
| <i>Rhynchonella</i> , Fischer.....                              | 14    |
| <i>R. asperitubica</i> , n. s., White, 1874.....                | 14    |

### CARBONIFEROUS.

#### SUB-CARBONIFEROUS PERIOD.

##### Polyps.

|                                                    |    |
|----------------------------------------------------|----|
| <i>Parasites</i> , Lamarck.....                    | 15 |
| <i>P. schottfeldi</i> , White & Whitfield MSS..... | 15 |

##### Platystrophia.

|                                                 |    |
|-------------------------------------------------|----|
| <i>Platystrophia</i> , Linnaeus.....            | 15 |
| <i>P. tuberculata</i> , n. s., White, 1874..... | 15 |



|                                                                                   | Page. |
|-----------------------------------------------------------------------------------|-------|
| <i>Orinoidea.</i>                                                                 |       |
| <i>Platycrinus</i> , Miller .....                                                 | 15    |
| <i>Platycrinus</i> , ——— † White, 1874 .....                                      | 15-16 |
| <i>Actinocrinus</i> , Miller .....                                                | 16    |
| <i>A. viaticus</i> , n. s., White, 1874 .....                                     | 16    |
| <i>Brachiopoda.</i>                                                               |       |
| <i>Spirigera</i> , d'Orbigny .....                                                | 16    |
| <i>S. monticola</i> , n. s., White, 1874 .....                                    | 16    |
| CARBONIFEROUS PERIOD.                                                             |       |
| <i>Echinodermata.</i>                                                             |       |
| <i>Archæocidaris</i> , McCoy .....                                                | 17    |
| <i>A. tridifer</i> , n. s., White, 1874 .....                                     | 17-18 |
| <i>Polysoa.</i>                                                                   |       |
| <i>Glaucome</i> , Goldfuss .....                                                  | 18    |
| <i>G. nereidis</i> , n. s., White, 1874 .....                                     | 18-19 |
| <i>Polypora</i> , McCoy .....                                                     | 19    |
| <i>P. stragula</i> , n. s., White, 1874 .....                                     | 19    |
| <i>Brachiopoda.</i>                                                               |       |
| <i>Chonetes</i> , Fischer .....                                                   | 19    |
| <i>C. platynota</i> , n. s., White, 1874 .....                                    | 19    |
| <i>Rhynchonella</i> , Fischer .....                                               | 19    |
| <i>R. wasatchensis</i> , n. s., White, 1874 .....                                 | 19-20 |
| <i>R. metallica</i> , n. s., White, 1874 .....                                    | 20    |
| <i>Spirifer</i> , Sowerby .....                                                   | 20    |
| <i>S. (Martinia) glaber</i> var. <i>contracta</i> , Meek & Worthen .....          | 20-21 |
| <i>Spiriferina</i> , d'Orbigny .....                                              | 21    |
| <i>S. spinosa</i> , Norwood & Pratten, var. <i>campestris</i> , White, 1874 ..... | 21    |
| <i>Dielasma</i> , King .....                                                      | 21    |
| <i>D. † boidens</i> , Morton, sp .....                                            | 21    |
| <i>Conchifera.</i>                                                                |       |
| <i>Aviculopecten</i> , McCoy .....                                                | 21    |
| <i>A. coreyana</i> , n. s., White, 1874 .....                                     | 21-22 |
| <i>Monopteria</i> , Meek & Worthen .....                                          | 22    |
| <i>M. marjan</i> , n. s., White, 1874 .....                                       | 22    |
| <i>Gasteropoda.</i>                                                               |       |
| <i>Macrocheilus</i> , Phillips .....                                              | 22    |
| <i>M. angulifera</i> , n. s., White, 1874 .....                                   | 22-23 |
| <i>Dentalium</i> , Linnæus .....                                                  | 23    |
| <i>D. canna</i> , n. s., White, 1874 .....                                        | 23    |
| MESOZOIC.                                                                         |       |
| JURASSIC PERIOD.                                                                  |       |
| <i>Conchifera.</i>                                                                |       |
| <i>Camptonectes</i> , Agassiz .....                                               | 23    |
| <i>C. stygius</i> , n. s., White, 1874 .....                                      | 23    |
| <i>Gasteropoda.</i>                                                               |       |
| <i>Neritina</i> , Lamarck .....                                                   | 24    |
| <i>N. phaseolaris</i> , n. s., White, 1874 .....                                  | 24    |
| <i>Anchura</i> , Conrad .....                                                     | 24    |
| <i>A. nuptialis</i> , n. s., White, 1874 .....                                    | 24    |
| CRETACEOUS PERIOD.                                                                |       |
| <i>Conchifera.</i>                                                                |       |
| <i>Pinna</i> , Linnæus .....                                                      | 24    |
| <i>P. petrina</i> , n. s., White, 1874 .....                                      | 24-25 |
| <i>Camptonectes</i> , Agassiz .....                                               | 26    |
| <i>C. platessa</i> , n. s., White, 1874 .....                                     | 25    |
| <i>Inoceramus</i> , Sowerby .....                                                 | 25    |
| <i>I. dimidius</i> , n. s., White, 1874 .....                                     | 25-26 |
| <i>Leiopliatha</i> , Meek .....                                                   | 26    |
| Subgenus <i>Psilomya</i> , Meek .....                                             | 26    |
| <i>L. (Psilomya) meekii</i> , n. s., White, 1874 .....                            | 26    |
| <i>Gasteropoda.</i>                                                               |       |
| <i>Cassiope</i> , Coquand .....                                                   | 27    |
| <i>C. whitfieldi</i> , n. s., White, 1874 .....                                   | 27    |

## 44.

WHITE, C. A. On the Equivalency of the Coal-Measures of the United States and Europe. < Proc. Amer. Ass. Adv. Sci., 23d Meeting (Hartford), 1874, pp. B, 35-38. Salem, 1875.

Same. Salem, 1875. 8vo, pp. 35-38. Thirty separates printed without title-page, covers, or repaging.

An affirmative opinion is expressed.

## 45.

WHITE, C. A. The Great Western Exploring Parties and their Progress. < Boston Daily Advertiser (newspaper), vol. 126, No. 91. Boston, October 15, 1875.

This is the first of a series of three articles written from the field. This one was written from Southern Wyoming, describing the country, and mentioning Powell's plan for having the arid region surveyed into irregular-shaped ranches, and not by the rectangular method in use in the humid regions.

## 46.

WHITE, C. A. The Far West. < Boston Daily Advertiser (newspaper), vol. 126, No. 108. Boston, November 4, 1875.

The second of a series of articles written from the field. This one is from Northern Utah, describing the vegetable products of that region.

## 47.

WHITE, C. A. The Far West. < Boston Daily Advertiser (newspaper), vol. 126, No. 115. Boston, November 12, 1875.

The third and last of a series of three articles written from the field. This was written from Northern Utah, describing the animals of that region.

## 48.

WHITE, C. A. Report upon the Invertebrate Fossils collected in portions of Nevada, Utah, Colorado, New Mexico, and Arizona, by Parties of the Expeditions of 1871, 1872, 1873, and 1874. < Report upon Geographical and Geological Explorations and Surveys West of the 100th Meridian, in charge of First Lieut. Geo. M. Wheeler, Corps of Engineers, U. S. Army. 4to. vol. iv. part i, Paleontology. pp. 1-219, pls. i-xxi. Washington, 1875.

Same. Washington: Government Printing Office, 1875. 4to, pp. 219, and 21 plates of illustrations. Two hundred and fifty separates printed and bound in paper covers, and 30 copies printed and bound separately in boards for the author, with a different imprint upon the back.

This report comprises descriptions and illustrations of fossils and some general observations upon the periods which they represent. One hundred and seventy-five species are described and illustrated, from the Primordial, Silurian, Carboniferous, Jurassic, Cretaceous, and Tertiary rocks, the majority of which were formerly known. A few, however, are herein described for the first time, but the new forms of these collections were mostly described in the preliminary report (Entry No. 43). The genus *Lisopodonthus* is here proposed.

## LOWER SILURIAN AGE.

## PRIMORDIAL PERIOD.

## Plants.

## Cryptogamia.

## Thallogea.

|                                                              |       |
|--------------------------------------------------------------|-------|
| <i>Cruciatia</i> , d'Orbigny, 1842.....                      | 22    |
| <i>C. hamarsensis</i> , White, 1874, pl. i, figs. 2 a-c..... | 22-23 |
| <i>C. rustica</i> , White, 1874, pl. i, figs. 1 a, b.....    | 22-24 |



|                                                                                                  | Animalia. | Page. |
|--------------------------------------------------------------------------------------------------|-----------|-------|
| <i>Brachiopoda.</i>                                                                              |           |       |
| <i>Acrotreta</i> , Kutorga, 1848                                                                 | .....     | 34    |
| <i>A. ? subaidua</i> , White, 1874, pl. i, figs. 3 <i>a-d</i> .....                              |           | 34-36 |
| <i>Trematis</i> , Sharpe, 1847.....                                                              |           | 36    |
| <i>T. pannulus</i> , White, 1874, pl. i, figs. 4 <i>a</i> and <i>b</i> .....                     |           | 36-37 |
| <i>Gasteropoda.</i>                                                                              |           |       |
| <i>Hyalithes</i> , Eichwald, 1840.....                                                           |           | 37    |
| <i>H. primordialis</i> ? Hall? 1861, pl. i, figs. 5 <i>a-e</i> .....                             |           | 37-38 |
| <i>Crustacea.</i>                                                                                |           |       |
| <i>Agnostus</i> , Brongniart, 1821.....                                                          |           | 38    |
| <i>A. interstrictus</i> , White, 1874, pl. ii, figs. 5 <i>a</i> and <i>b</i> .....               |           | 38-40 |
| <i>Conocoryphe</i> , Corda, 1847.....                                                            |           | 40    |
| Subgenus <i>Ptychoparia</i> , Corda, 1847.....                                                   |           | 40    |
| <i>C. (Ptychoparia) kingii</i> , Meek, 1870, pl. ii, figs. 2 <i>a-c</i> .....                    |           | 40-43 |
| <i>Asaphiscus</i> , Meek, 1872.....                                                              |           | 43    |
| <i>A. wheeleri</i> , Meek, 1872, pl. ii, figs. 1 <i>a-f</i> .....                                |           | 43-44 |
| <i>Olenellus</i> , Hall, 1861.....                                                               |           | 44    |
| <i>O. gilberti</i> , Meek, MSS., 1874, pl. ii, figs. 3 <i>a-c</i> .....                          |           | 44-46 |
| <i>O. howelli</i> , Meek, MSS., 1874, pl. ii, figs. 4 <i>a</i> and <i>b</i> .....                |           | 47-48 |
| <i>Vestigia</i> , White, 1875, pl. i, figs. 6, <i>a</i> and <i>b</i> .....                       |           | 49    |
| CANADIAN PERIOD.                                                                                 |           |       |
| <i>Rhizopoda.</i>                                                                                |           |       |
| <i>Receptaculites</i> , DeFrance, 1827.....                                                      |           | 50    |
| <i>Receptaculites</i> — ( ? ).....                                                               |           | 50    |
| <i>Hydrozoa.</i>                                                                                 |           |       |
| <i>Phyllograptus</i> , Hall, 1858.....                                                           |           | 51    |
| <i>P. loringi</i> , White, 1874, pl. iii, figs. 1 <i>a</i> and <i>b</i> .....                    |           | 51-52 |
| <i>Brachiopoda.</i>                                                                              |           |       |
| <i>Lingula</i> , Bruguière, 1789.....                                                            |           | 52    |
| <i>L. ? manticula</i> , White, 1874, pl. iii, figs. 2 <i>a</i> and <i>b</i> .....                |           | 52-53 |
| <i>Acrotreta</i> , Kutorga, 1848.....                                                            |           | 53    |
| <i>A. pyridicula</i> , White, 1874, pl. iii, figs. 3 <i>a</i> and <i>b</i> .....                 |           | 53-54 |
| <i>Strophomena</i> , Rafinesque, 1827.....                                                       |           | 54    |
| <i>S. fontinalis</i> , White, 1874, pl. iii, figs. 4 <i>a-c</i> .....                            |           | 54-55 |
| <i>Orthis</i> , Dalman, 1828.....                                                                |           | 55    |
| <i>O. electra</i> , Billings ( ? ).....                                                          |           | 55    |
| <i>Gasteropoda.</i>                                                                              |           |       |
| <i>Bellerophon</i> , Montfort, 1808.....                                                         |           | 55    |
| <i>B. allegoricus</i> , White, 1874, pl. iii, figs. 6 <i>a-c</i> .....                           |           | 55-56 |
| <i>Cephalopoda.</i>                                                                              |           |       |
| <i>Orthoceras</i> , Breynius, 1732.....                                                          |           | 56    |
| Subgenus <i>Camaroceras</i> , Conrad, 1842.....                                                  |           | 56    |
| <i>O. (Camaroceras) colon</i> , White, 1874, pl. iii, figs. 5 <i>a-d</i> .....                   |           | 56-57 |
| <i>Cyrtoceras</i> , Goldfuss, 1833.....                                                          |           | 57    |
| <i>C. — ( ? )</i> , White, 1875.....                                                             |           | 57-58 |
| <i>Crustacea.</i>                                                                                |           |       |
| <i>Leperditia</i> , Rouault, 1851.....                                                           |           | 58    |
| <i>L. bivia</i> , White, 1874, pl. iii, figs. 7 <i>a-d</i> .....                                 |           | 58-59 |
| <i>Megalaspis</i> , Angelin, 1854.....                                                           |           | 59    |
| <i>M. belemnurus</i> , White, 1874, pl. iii, fig. 9.....                                         |           | 59-60 |
| <i>Dicelloccephalus</i> , Owen, 1852.....                                                        |           | 60    |
| <i>D. ? flagricaudus</i> , White, 1874, pl. iii, figs. 8 <i>a</i> and <i>b</i> .....             |           | 60-61 |
| TRENTON PERIOD.                                                                                  |           |       |
| <i>Hydrozoa.</i>                                                                                 |           |       |
| <i>Graptolithus</i> , Linnæus, 1736.....                                                         |           | 62    |
| Subgenus <i>Climacograptus</i> , Hall, 1865.....                                                 |           | 62    |
| <i>G. (Climacograptus) ramulus</i> , White, 1874, pl. iv, figs. 3 <i>a-c</i> .....               |           | 62-63 |
| Subgenus <i>Diplograptus</i> , McCoy, 1850.....                                                  |           | 63    |
| <i>G. (Diplograptus) hypniformis</i> , White, 1874, pl. iv, figs. 4 <i>a</i> and <i>b</i> .....  |           | 63-64 |
| <i>G. (Diplograptus) pristis</i> , Hall ( ? ), 1847, pl. iv, figs. 2 <i>a</i> and <i>b</i> ..... |           | 65    |
| <i>G. quadrimucronatus</i> , Hall ( ? ), 1865, pl. iv, figs. 1 <i>a</i> and <i>b</i> .....       |           | 65-66 |
| <i>Actinozoa.</i>                                                                                |           |       |
| <i>Monticulipora</i> , d'Orbigny, 1850.....                                                      |           | 66    |
| <i>M. dalii</i> , Edwards & Haime, 1851, pl. iv, fig. 5.....                                     |           | 66-67 |

|                                                                                                | Page. |
|------------------------------------------------------------------------------------------------|-------|
| <i>Favosites</i> , Lamarck, 1816.....                                                          | 67    |
| <i>F.</i> ——— (1), White, 1875.....                                                            | 67    |
| <i>Favistella</i> , Hall, 1847.....                                                            | 67    |
| <i>F. stellata</i> , Hall, 1847, pl. iv, figs. 6 a-c.....                                      | 67-68 |
| <i>Zaphrentis</i> , Rafinesque et Clifford, 1820.....                                          | 68    |
| <i>Z.</i> ——— (1), White, 1875.....                                                            | 68    |
| <i>Brachiopoda.</i>                                                                            |       |
| <i>Strophomena</i> , Rafinesque, 1827.....                                                     | 69    |
| <i>S. filitexta</i> , Hall, 1847, pl. iv, fig. 8.....                                          | 69-70 |
| <i>Leptaena</i> , Dalman, 1828.....                                                            | 70    |
| <i>L. sericea</i> , Sowerby (1), pl. iv, fig. 7.....                                           | 70    |
| <i>Orthia</i> , Dalman, 1828.....                                                              | 70    |
| <i>O. occidentalis</i> , Hall, 1847, pl. iv, figs. 2 a and b.....                              | 70-72 |
| <i>O. testudinaria</i> , Dalman (1).....                                                       | 72    |
| <i>O. plicatella</i> , Hall (1), 1847, pl. iv, figs. 10 a-d.....                               | 72-74 |
| <i>O. bifurcata</i> , Schlotheim, var. <i>lynx</i> , White, 1875, pl. iv, figs. 9 a and b..... | 74-75 |
| <i>Rhynchonella</i> , Fischer, 1809.....                                                       | 75    |
| <i>R. argenturibica</i> , White, 1874, pl. iv, figs. 12 a-c.....                               | 75-76 |
| <i>Conchifera.</i>                                                                             |       |
| <i>Modiolopsis</i> , Hall, 1847.....                                                           | 76    |
| <i>M.</i> ——— (1), White, 1875.....                                                            | 76    |
| <i>Gasteropoda.</i>                                                                            |       |
| <i>Maclurea</i> , Le Sueur, 1818.....                                                          | 77    |
| <i>M.</i> ——— (1), White, 1875.....                                                            | 77    |
| <i>Raphitoma</i> , Hall, 1847.....                                                             | 77    |
| <i>R. trochiscus</i> , Meek, 1870, pl. iv, figs. 13 a-c.....                                   | 77-78 |

## CARBONIFEROUS AGE.

## SUBCARBONIFEROUS PERIOD.

|                                                                              |       |
|------------------------------------------------------------------------------|-------|
| <i>Actinozoa.</i>                                                            |       |
| <i>Favosites</i> , Lamarck, 1816.....                                        | 79    |
| <i>F. divergens</i> , White & Whitfield, 1862, pl. v, fig. 4.....            | 79-80 |
| <i>Syringopora</i> , Goldfuss, 1826.....                                     | 80    |
| <i>S. harveyi</i> , White (1).....                                           | 80    |
| <i>Echinodermata.</i>                                                        |       |
| <i>Granatocrinus</i> , Troost, 1850.....                                     | 80    |
| <i>G. lotoblastus</i> , White, 1874, pl. v, figs. 3 a and b.....             | 80-81 |
| <i>Platycrinus</i> , Miller, 1821.....                                       | 81    |
| <i>P.</i> ——— (1), White, 1875, pl. v, fig. 2.....                           | 81-82 |
| <i>Actinocrinus</i> , Miller, 1821.....                                      | 82    |
| <i>A. viaticus</i> , White, 1874, pl. v, fig. 1.....                         | 82-83 |
| <i>Brachiopoda.</i>                                                          |       |
| <i>Productus</i> , Sowerby, 1812.....                                        | 83    |
| <i>P. parvus</i> , M. & W., 1866, pl. v, figs. 6 a and b.....                | 83-84 |
| <i>Strophomena</i> , Rafinesque, 1827.....                                   | 85    |
| <i>S. rhomboidalis</i> , Wilckins, sp., 1767, pl. v, fig. 5.....             | 85-86 |
| <i>Spirifer</i> , Sowerby, 1815.....                                         | 86    |
| <i>S. centronatus</i> , Winchell, 1865, pl. v, figs. 8 a-c.....              | 86-87 |
| <i>S. striatus</i> , Martin, sp., pl. v, fig. 10 a.....                      | 88    |
| <i>S. extenuatus</i> , Hall, 1858, pl. v, figs. 9 a-d.....                   | 88-90 |
| Subgenus <i>Martinia</i> , McCoy, 1844.....                                  | 90    |
| <i>S. (Martinia) peculiaris</i> , Shumard, 1855, pl. v, figs. 7 a and b..... | 90-91 |
| <i>Spirigera</i> , d'Orbigny, 1847.....                                      | 91    |
| <i>S. monticola</i> , White, 1874, pl. v, figs. 11 a-d.....                  | 91-92 |
| <i>S. obmaxima</i> , McCheaney, 1860, pl. v, fig. 12.....                    | 92-93 |
| <i>Terebratulida</i> , Lillhyed, 1698.....                                   | 93    |
| Subgenus <i>Dielasma</i> , King, 1859.....                                   | 93    |
| <i>T. (Dielasma) burlingtonensis</i> , White, 1880.....                      | 93    |
| <i>Clonchifera.</i>                                                          |       |
| <i>Conocardium</i> , Brown, 1835.....                                        | 94    |
| <i>C.</i> ——— (1), White, 1875.....                                          | 94    |
| <i>Gasteropoda.</i>                                                          |       |
| <i>Euomphalus</i> , Sowerby, 1815.....                                       | 94    |
| <i>E. lusus</i> , n. s., White, 1875, pl. v, figs. 13 a and b.....           | 94-95 |



|                                                                                                              | CARBONIFEROUS PERIOD. | Page.   |
|--------------------------------------------------------------------------------------------------------------|-----------------------|---------|
| <i>Protozoa.</i>                                                                                             |                       |         |
| <i>Rhizopoda.</i>                                                                                            |                       |         |
| <i>Fusulina</i> , Fischer, 1837.....                                                                         |                       | 96      |
| <i>F. cylindrica</i> , Fischer, 1837, pl. vi, figs. 6 <i>a</i> and <i>b</i> .....                            |                       | 96-98   |
| <i>Actinozoa.</i>                                                                                            |                       |         |
| <i>Chatetes</i> , Fischer, 1837.....                                                                         |                       | 98      |
| <i>C. milleporaceus</i> , Troost, sp., 1849 f, pl. vi, fig. 2 <i>a</i> .....                                 |                       | 98-99   |
| <i>Rhombipora</i> , Meek, 1872.....                                                                          |                       | 99      |
| <i>R. lepidodendroides</i> , Meek, 1872, pl. vi, figs. 5 <i>a-d</i> .....                                    |                       | 99-100  |
| <i>Syringopora</i> , Goldfuss, 1826.....                                                                     |                       | 100     |
| <i>S. multattenuata</i> , McChesney (?).....                                                                 |                       | 100-101 |
| <i>Zaphrentis</i> , Rafinesque & Clifford.....                                                               |                       | 101     |
| <i>Z. excentrica</i> , Meek, 1872, pl. vi, fig. 3 <i>a</i> .....                                             |                       | 101     |
| <i>Lophophyllum</i> , Edwards & Haime, 1850.....                                                             |                       | 101     |
| <i>L. proliferum</i> , McChesney, sp., var. <i>sauridens</i> , White, 1875, pl. vi, figs. 4 <i>a-d</i> ..... |                       | 101-103 |
| <i>Lithostrotion</i> , Fleming, 1828.....                                                                    |                       | 103     |
| <i>L. whitneyi</i> , Meek, 1875, pl. vi, figs. 1 <i>a-c</i> .....                                            |                       | 103     |
| <i>Echinodermata.</i>                                                                                        |                       |         |
| <i>Archæocidaris</i> , McCoy, 1844.....                                                                      |                       | 104     |
| <i>A. ornatus</i> , Newberry, 1861, pl. vi, fig. 7.....                                                      |                       | 104     |
| <i>A. tridifer</i> , White, 1874, pl. vi, figs. 8 <i>a</i> and <i>b</i> .....                                |                       | 104-105 |
| <i>Polyzoa.</i>                                                                                              |                       |         |
| <i>Glaucanome</i> , Goldfuss, 1826.....                                                                      |                       | 105     |
| <i>G. nereidis</i> , White, 1874, pl. vii, figs. 5 <i>a-e</i> .....                                          |                       | 105-107 |
| <i>Synocladia</i> , King, 1849.....                                                                          |                       | 107     |
| <i>S. biserialis</i> , Swallow, 1858, pl. vii, figs. 3 <i>a-c</i> .....                                      |                       | 107-108 |
| <i>Polypora</i> , McCoy, 1844.....                                                                           |                       | 108     |
| <i>P. stragula</i> , White, 1874, pl. vii, figs. 4 <i>a</i> and <i>b</i> .....                               |                       | 108-109 |
| <i>Brachiopoda.</i>                                                                                          |                       |         |
| <i>Productus</i> , Sowerby, 1812.....                                                                        |                       | 109     |
| <i>P. costatus</i> , Sowerby (?), 1827, pl. viii, figs. 2 <i>a-d</i> .....                                   |                       | 109-111 |
| <i>P. semireticulatus</i> , Martin, sp., 1809, pl. viii, figs. 1 <i>a-c</i> .....                            |                       | 111-113 |
| <i>P. prattenianus</i> , Norwood, 1854, pl. vii, figs. 1 <i>a-c</i> .....                                    |                       | 113-114 |
| <i>P. punctatus</i> , Martin, sp., 1809, pl. vii, figs. 2 <i>a-c</i> .....                                   |                       | 114-116 |
| <i>P. nebrascensis</i> , Owen, 1852, pl. viii, figs. 3 <i>a-d</i> .....                                      |                       | 116-117 |
| <i>P. longispinus</i> , Sowerby, 1814, pl. viii, figs. 5 <i>a-d</i> .....                                    |                       | 118-119 |
| <i>P. muricatus</i> , Norwood & Pratten, 1854, pl. viii, figs. 4 <i>a-c</i> .....                            |                       | 120     |
| <i>P. mexicanus</i> , Shumard (?), 1858, pl. viii, figs. 6 <i>a-c</i> .....                                  |                       | 120-121 |
| <i>Chonetes</i> , Fischer, 1837.....                                                                         |                       | 121     |
| <i>C. platynota</i> , White, 1874, pl. ix, figs. 6 <i>a-e</i> .....                                          |                       | 121-122 |
| <i>C. granulifera</i> , Owen, 1855, pl. ix, figs. 8 <i>a-c</i> .....                                         |                       | 122-123 |
| <i>C. mesoloba</i> , Norwood & Pratten, 1854, pl. ix, fig. 7 <i>a</i> .....                                  |                       | 123     |
| <i>Hemipronites</i> , Pander, 1830.....                                                                      |                       | 124     |
| <i>H. crinistria</i> , Phillips, sp., pl. x, fig. 9 <i>a</i> .....                                           |                       | 124-125 |
| <i>Orthis</i> , Dalman, 1828.....                                                                            |                       | 125     |
| <i>O. pecosii</i> , Marcou, 1858, pl. ix, figs. 5 <i>a-e</i> .....                                           |                       | 125-126 |
| <i>Meekella</i> , White & St. John, 1867.....                                                                |                       | 126     |
| <i>M. striatocostata</i> , Cox, sp., 1857, pl. ix, figs. 4 <i>a-e</i> .....                                  |                       | 126-128 |
| <i>Rhynchonellidae.</i>                                                                                      |                       |         |
| <i>Rhynchonella</i> , Fischer, 1809.....                                                                     |                       | 128     |
| <i>R. uta</i> , Marcou, sp., 1858, pl. ix, figs. 2 <i>a-c</i> .....                                          |                       | 128-129 |
| <i>R. metallica</i> , White, 1874, pl. x, figs. 10 <i>a-d</i> .....                                          |                       | 129-130 |
| <i>R. wasatchensis</i> , White, 1874, pl. ix, figs. 3 <i>a-d</i> .....                                       |                       | 130-131 |
| <i>R. rockymontana</i> , Marcou, 1858, pl. ix, figs. 1 <i>a-d</i> .....                                      |                       | 131-132 |
| <i>Spirifer</i> , Sowerby, 1815.....                                                                         |                       | 132     |
| <i>S. cameratus</i> , Morton, 1836, pl. x, figs. 1 <i>a-d</i> .....                                          |                       | 132-134 |
| <i>S. striatus</i> , Martin, sp.....                                                                         |                       | 134     |
| <i>S. rockymontanus</i> , Marcou, 1858, pl. xi, figs. 9 <i>a-d</i> .....                                     |                       | 134-135 |
| Subgenus <i>Martinia</i> , McCoy, 1844.....                                                                  |                       | 135     |
| <i>S. (Martinia) planoconvexus</i> , Shumard, 1855, pl. x, figs. 3 <i>a-c</i> .....                          |                       | 135-136 |
| <i>S. (Martinia) glaber</i> var. <i>contracta</i> , Meek & Worthen, 1866, pl. x, figs. 2 <i>a-c</i> .....    |                       | 136-138 |
| <i>Spiriferina</i> , d'Orbigny, 1847.....                                                                    |                       | 138     |
| <i>S. kentuckensis</i> , Shumard, 1855, pl. x, figs. 4 <i>a-c</i> .....                                      |                       | 138-139 |
| <i>S. octoplicata</i> , Sowerby, 1827, pl. x, figs. 8 <i>a-c</i> .....                                       |                       | 139-140 |
| <i>Retzia</i> , King, 1850.....                                                                              |                       | 141     |
| <i>R. mormonii</i> , Marcou, 1858, pl. x, figs. 7 <i>a-c</i> .....                                           |                       | 141     |

|                                                                          | Page.   |
|--------------------------------------------------------------------------|---------|
| <i>Spirigera</i> , d'Orbigny, 1847.....                                  | 141     |
| <i>S. subtilis</i> , Hall, 1852, pl. x, figs. 6 a-c.....                 | 141-143 |
| <i>S. planorulcata</i> , Phillips, sp. 1836, pl. x, figs. 5 a-d.....     | 143-144 |
| <i>Terebratulidae</i> .                                                  |         |
| <i>Terebratula</i> Lhw. 1698.....                                        | 144     |
| Subgenus <i>Dielasma</i> , Kipg, 1859.....                               | 144     |
| <i>T. (Dielasma) boidensis</i> , Morton, 1836, pl. xi, figs. 10 a-c..... | 144-146 |
| <i>Mollusca vera.</i>                                                    |         |
| <i>Conchifera.</i>                                                       |         |
| <i>Monomyaria.</i>                                                       |         |
| <i>Pectinidae.</i>                                                       |         |
| <i>Aviculopecten</i> , McCoy, 1852.....                                  | 146     |
| <i>A. occidentalis</i> , Shumard, 1855, pl. xii, figs. 8 a and b.....    | 146-147 |
| <i>A. coreyanus</i> , White, 1874, pl. xi, figs. 1 a and b.....          | 147-148 |
| <i>A. mecoyi</i> , M. & H., 1864, pl. xi, fig. 2 a.....                  | 149     |
| <i>A. interlineatus</i> , M. & W., 1860, pl. xi, fig. 3 a.....           | 149-150 |
| <i>Pinnidae.</i>                                                         |         |
| <i>Pinna</i> , Linnaeus, 1758.....                                       | 151     |
| <i>P. peracuta</i> , Shumard (!), pl. xi, fig. 5 a.....                  | 151     |
| <i>Pteriidae.</i>                                                        |         |
| <i>Monopteria</i> , M. & W., 1866.....                                   | 151     |
| <i>M. marian</i> , White, 1874, pl. xi, figs. 4 a-c.....                 | 151-152 |
| <i>Myalina</i> , de Koninck, 1844.....                                   | 153     |
| <i>Myalina</i> (?), White, 1875.....                                     | 153     |
| <i>M. ? swalloi</i> , McChesney, pl. xi, fig. 8 a.....                   | 153     |
| <i>Bakevellia</i> , King, 1848.....                                      | 153     |
| <i>B. parva</i> , M. & H., 1858, pl. xi, figs. 7 a and b.....            | 153     |
| <i>Dymyaria.</i>                                                         |         |
| <i>Trigoniidae.</i>                                                      |         |
| <i>Schizodus</i> , King, 1844.....                                       | 154     |
| <i>S. wheeleri</i> , Swallow, 1862, pl. xi, figs. 6 a and b.....         | 154     |
| <i>Allorisma</i> , King, 1850.....                                       | 155     |
| <i>A. subcuneata</i> , var. M. & H., pl. xii, figs. 7 a and b.....       | 155     |
| <i>Gasteropoda.</i>                                                      |         |
| <i>Prosopoccephala.</i>                                                  |         |
| <i>Solenocoencha.</i>                                                    |         |
| <i>Dentaliidae.</i>                                                      |         |
| <i>Dentalium</i> , Linnaeus, 1740.....                                   | 156     |
| <i>D. canna</i> , White, 1874, pl. xii, figs. 6 a and b.....             | 156     |
| <i>Dicæa.</i>                                                            |         |
| <i>Rhiphidoglossa.</i>                                                   |         |
| <i>Dicranobranchia.</i>                                                  |         |
| <i>Bellerophonidae.</i>                                                  |         |
| <i>Bellerophon</i> , Montfort, 1808.....                                 | 157     |
| <i>B. crassus</i> , M. & W., 1860, pl. xii, fig. 1 a.....                | 157     |
| <i>Podophthalma.</i>                                                     |         |
| <i>Euomphalidae.</i>                                                     |         |
| <i>Euomphalus</i> , Sowerby, 1815.....                                   | 158     |
| <i>E. pernodorus</i> , M. & W., 1870, pl. xii, figs. 2 a and b.....      | 158     |
| <i>Pectinibranchiata.</i>                                                |         |
| <i>Teniglossa.</i>                                                       |         |
| <i>Naticidae.</i>                                                        |         |
| <i>Naticopsis</i> , McCoy, 1844.....                                     | 159     |
| <i>N. nana</i> , M. & W., 1866, pl. xii, figs. 4 a and b.....            | 159     |
| <i>Capulidae.</i>                                                        |         |
| <i>Platyceras</i> , Conrad, 1840.....                                    | 159     |
| <i>P. nebrascense</i> , Meek, 1872, pl. xii, figs. 5 a-d.....            | 159-160 |
| <i>Macrocheilidae.</i>                                                   |         |
| <i>Macrocheilus</i> , Phillips, 1841.....                                | 160     |
| <i>M. anguliferus</i> , White, 1874, pl. xii, figs. 3 a-f.....           | 160-161 |
| <i>Cephalopoda.</i>                                                      |         |
| <i>Tetrabranchiata.</i>                                                  |         |
| <i>Goniattidae.</i>                                                      |         |
| <i>Goniattites</i> , de Haan, 1825.....                                  | 161     |
| <i>Nautilidae.</i>                                                       |         |
| <i>Nautilus</i> , Breynius, 1732.....                                    | 161     |

MESOZOIC AGE.

JURASSIC PERIOD.

*Radiata.*

*Echinodermata.*

*Orinoidea.*

*Pentacrinida.*

|                                                                    |         |
|--------------------------------------------------------------------|---------|
| <i>Pentacrinus</i> , Miller, 1821 .....                            | 163     |
| <i>P. asteriacus</i> , M. & H., 1864, pl. xiii, figs. 6 a, b ..... | 163-163 |

*Mollusca.*

*Oonchifera.*

*Monomyaria.*

*Ostreida.*

|                                                                          |         |
|--------------------------------------------------------------------------|---------|
| <i>Ostrea</i> , Linnæus, 1758 .....                                      | 163     |
| <i>O. strigilecula</i> , n. s., White, 1875, pl. xiii, figs. 3 a-d ..... | 163-164 |

*Pectinida.*

|                                                              |         |
|--------------------------------------------------------------|---------|
| <i>Camptonectes</i> , Meek (Agassiz), 1864 .....             | 164     |
| <i>O. stygius</i> , White, 1874, pl. xiii, figs. 2 a-c ..... | 164-165 |
| <i>O. bellistriatus</i> , M. & H. ....                       | 165     |

*Pterida.*

|                                                                         |     |
|-------------------------------------------------------------------------|-----|
| <i>Inoceramus</i> , Sowerby, 1814 .....                                 | 166 |
| <i>I. crassalatus</i> , n. s., White, 1875, pl. xiii, figs. 4 a-c ..... | 166 |

*Dimyaria.*

*Trigoniida.*

|                                                                             |         |
|-----------------------------------------------------------------------------|---------|
| <i>Myophoria</i> , Brown, 1830.                                             |         |
| <i>M. ambilineata</i> , n. s., White, 1875, pl. xiii, figs. 5 a and b ..... | 166-167 |
| <i>Trigonia</i> , Bruguière, 1789 .....                                     | 167     |
| <i>T.</i> ——— (1), White, 1875 .....                                        | 167     |

*Gasteropoda.*

*Dicæa.*

*Rhipidoglossa.*

*Podophthalma.*

*Neritida.*

|                                                                    |         |
|--------------------------------------------------------------------|---------|
| <i>Neritina</i> , Lamarck, 1809 .....                              | 167     |
| <i>N. ? phaseolaris</i> , White, 1874, pl. xiii, figs. 1 a-c ..... | 167-168 |

CRETACEOUS PERIOD.

*Mollusca.*

*Molluscoidea.*

*Brachiopoda.*

*Lyopomata.*

*Lingulida.*

|                                                               |     |
|---------------------------------------------------------------|-----|
| <i>Lingula</i> , Bruguière, 1782 .....                        | 169 |
| <i>L. subpatulata</i> , H. & M., 1856, pl. xv, fig. 4 a ..... | 169 |

*Mollusca vera.*

*Oonchifera.*

*Monomyaria.*

*Ostreida.*

|                                                                                          |         |
|------------------------------------------------------------------------------------------|---------|
| <i>Ostrea</i> , Linnæus, 1[7]58 .....                                                    | 170     |
| <i>O. cortex</i> , Conrad, 1857, pl. xv, figs. 2 a-c .....                               | 170     |
| <i>O. prudentia</i> , n. s., White, 1875, pl. xiv, figs. 2 a-d .....                     | 171     |
| <i>Gryphea</i> , Lamarck, 1801 .....                                                     | 171     |
| <i>G. pitcheri</i> , var. Morton, pl. xvii, figs. 1 a-f .....                            | 171-173 |
| <i>Exogyra</i> , Say, 1819 .....                                                         | 172     |
| <i>E. ponderosa</i> , Römer, 1852, pl. xiv, figs. 1 a-c .....                            | 172-173 |
| <i>E. laeviuscula</i> , Römer, 1852, pl. xvii, figs. 2 a-d .....                         | 173-174 |
| <i>E. costata</i> , Say, var. <i>fluminis</i> , White, 1875, pl. xvii, figs. 3 a-d ..... | 174-175 |

*Pectinida.*

|                                                            |     |
|------------------------------------------------------------|-----|
| <i>Camptonectes</i> , Meek (Agassiz), 1864 .....           | 176 |
| <i>O. platessa</i> , White, 1874, pl. xvii, fig. 5 a ..... | 176 |

*Lamida.*

|                                                                |         |
|----------------------------------------------------------------|---------|
| <i>Lima</i> , Bruguière, 1791 .....                            | 176     |
| <i>L. wacoensis</i> , Römer, 1852, pl. xvii, figs. 4 a-c ..... | 176-177 |

*Pterida.*

|                                                                         |         |
|-------------------------------------------------------------------------|---------|
| <i>Inoceramus</i> , Sowerby, 1814 .....                                 | 177     |
| <i>I. problematicus</i> , Schlotheim sp., 1820, pl. xvi, fig. 3 a ..... | 177-178 |
| <i>I. fragilis</i> , Hall & Meek, 1856, pl. xv, fig. 3 a .....          | 178     |

# BULLETIN NO. 30, UNITED STATES NATIONAL MUSEUM.

|                                                                                | Page.   |
|--------------------------------------------------------------------------------|---------|
| <i>I. flaccidus</i> , n. s., White, 1875, pl. xvi, figs. 1 a and b .....       | 178-179 |
| <i>I. deformis</i> , Meek, 1872, pl. xv, figs. 1 a and b .....                 | 178-179 |
| <i>I. barabini</i> , Morton, 1834, pl. xvi, fig. 4 a .....                     | 180-181 |
| <i>I. dimidius</i> , White, 1874, pl. xvi, figs. 2 a-d .....                   | 181-182 |
| <b>Pinnida.</b>                                                                |         |
| <i>Pinna</i> , Linnæus, 1758 .....                                             | 182     |
| <i>P. petrina</i> , White, 1874, pl. xiii, figs. 7 a and b .....               | 182-183 |
| <b>Dymyaria.</b>                                                               |         |
| <b>Aroida.</b>                                                                 |         |
| <i>Idonearca</i> , Conrad, 1862 .....                                          | 183     |
| <i>I. depressa</i> , n. s., White, 1875, pl. xviii, figs. 13 a and b .....     | 183-184 |
| <b>Lucinida.</b>                                                               |         |
| <i>Lucina</i> , Bruguière, 1792 .....                                          | 184     |
| <i>L. subundata</i> , Hall & Meek, 1856, pl. xviii, fig. 13 a .....            | 184     |
| <b>Glossida.</b>                                                               |         |
| <i>Veniella</i> , Stoliczka, 1870 .....                                        | 185     |
| <i>V. goniphora</i> , Meek, 1875 .....                                         | 185     |
| <b>Mastrida.</b>                                                               |         |
| <i>Mactra</i> , Linnæus .....                                                  | 185     |
| <i>M. ? incompa</i> , n. s., White, 1875, pl. xvii, fig. 6 a and b .....       | 185     |
| <b>Anatinida.</b>                                                              |         |
| <i>Leiopiatha</i> , Meek, 1864 .....                                           | 186     |
| Subgenus <i>Psilomya</i> , Meek, MSS., 1874 .....                              | 186     |
| <i>L. (Psilomya) meeki</i> , White, 1874, pl. xviii, figs. 14 a-d .....        | 186-187 |
| Subgenus <i>Cymella</i> , Meek, 1864 .....                                     | 187     |
| <i>L. (Cymella) undata</i> , M. & H., sp., 1856, pl. xviii, fig. 15 a .....    | 187     |
| <b>Corbulida.</b>                                                              |         |
| <i>Corbula</i> , Bruguière, 1792 .....                                         | 188     |
| <i>C. nematophora</i> , Meek, 1872, pl. xvii, figs. 7 a-c .....                | 188-189 |
| <b>Heropoda.</b>                                                               |         |
| <b>Nassa.</b>                                                                  |         |
| <b>Rhiphidoglossa.</b>                                                         |         |
| <b>Neritida.</b>                                                               |         |
| <i>Neritina</i> , Lamarck, 1809 .....                                          | 189     |
| Subgenus ( <i>Velatella</i> ) Meek, 1872 .....                                 | 189     |
| <i>N. (Velatella) carditoides</i> , Meek, 1872, pl. xviii, figs. 7 a-c .....   | 189-190 |
| <b>ectinibranchiata.</b>                                                       |         |
| <b>Tænioglossa.</b>                                                            |         |
| <b>Aporrhaidæ.</b>                                                             |         |
| <i>Anchura</i> , Conrad, 1860 .....                                            | 190     |
| <i>A. ? furiformis</i> , Meek, MSS., 1874, pl. xviii, fig. 4 a .....           | 190-191 |
| <i>Lispodactylus</i> , n. g., White, 1875 .....                                | 191     |
| <i>L. nuptialis</i> , White, 1874, pl. xviii, figs. 3 a and b .....            | 192     |
| <i>L. lingulifera</i> , n. s., White, 1875, pl. xviii, figs. 2 a and b .....   | 192-193 |
| <b>Tecturida.</b>                                                              |         |
| <i>Antevinyon</i> , M. & H., 1860 .....                                        | 193     |
| <i>A. borealis</i> , Morton, sp., 1842, pl. xviii, figs. 9 a and b .....       | 193-194 |
| <i>A. centrale</i> , Meek, 1870, pl. xviii, figs. 8 a and b .....              | 194-195 |
| <b>Turritellida.</b>                                                           |         |
| <i>Turritella</i> , Lamarck, 1801 .....                                        | 195     |
| <i>T. uvasana</i> , Conrad, 1856, pl. xviii, figs. 11 a and b .....            | 195     |
| <i>Cassiope</i> , Coquand, 1865 .....                                          | 196     |
| <i>C. whitfieldi</i> , White, 1874, pl. xviii, fig. 1 a .....                  | 196     |
| <i>Kallmella</i> , Forbes, 1846 .....                                          | 197     |
| <i>K. funicula</i> , Meek, 1872, pl. xviii, fig. 6 a .....                     | 197     |
| <b>Pyramitellida.</b>                                                          |         |
| <i>Turbonilla</i> , Leach, 1825 .....                                          | 197     |
| Subgenus ( <i>Chamnitzia</i> ), Conrad, 1860 .....                             | 197     |
| <i>T. (Chamnitzia) melanopsis</i> , Conrad ? pl. xviii, fig. 10 a .....        | 197-198 |
| <b>Trochopoda.</b>                                                             |         |
| <b>Admetidae.</b>                                                              |         |
| <i>Admete</i> , Möller, 1842 .....                                             | 198     |
| Subgenus <i>Admetopsis</i> , Meek, 1872 .....                                  | 198     |
| <i>A. (Admetopsis) pregaria</i> , Meek, 1872, pl. xviii, figs. 5 a and b ..... | 198-199 |

\* *Λίσσος*, smooth, and *ἱσθῆς*, a garment.



|                                                                             | Page.            |
|-----------------------------------------------------------------------------|------------------|
| <i>Cephalopoda.</i>                                                         |                  |
| <i>Tetrabranchiata.</i>                                                     |                  |
| <i>Baculitidae.</i>                                                         |                  |
| <i>Baculites</i> , Lamarek, 1801 .....                                      | 199              |
| <i>B. ovatus</i> , Say, pl. xix, figs. 4 a-c, and 5 a-c.....                | 199-200          |
| <i>Scaphitidae.</i>                                                         |                  |
| <i>Scaphites</i> , Parkinson, 1811.....                                     | 200              |
| <i>S. warreni</i> , M. & H., 1860, pl. xix, fig. 3 a .....                  | 200-201          |
| <i>Ammonitidae.</i>                                                         |                  |
| <i>Ammonites</i> , Bruguière, 1789.....                                     | 201              |
| <i>A. lavianus</i> , n. s., White, 1875, pl. xix, figs. 1 a and b.....      | 201-202          |
| <i>A. placenta</i> , DeKay, var. <i>intercalaris</i> M. & H.....            | 202              |
| <i>Buchiceras</i> , Hyatt, 1875.....                                        | 202              |
| <i>B. swallovi</i> , Shumard, 1860, pl. xx, figs. 1 a-c .....               | 202-203          |
| <i>Turrilitidae.</i>                                                        |                  |
| <i>Helicoceras</i> , d'Orbigny, 1842 .....                                  | 203              |
| <i>H. parienne</i> , n. s., White, 1875, pl. xix, figs. 2 a-d .....         | 203-204          |
| <i>Articulata.</i>                                                          |                  |
| <i>Vermes.</i>                                                              |                  |
| <i>Tubicolæ.</i>                                                            |                  |
| <i>Serpulidae.</i>                                                          |                  |
| <i>Serpula</i> , Linnæus, 1758 .....                                        | 205              |
| <i>S. intricæ</i> , n. s., White, 1875, pl. xv, fig. 5 a .....              | 205              |
|                                                                             |                  |
|                                                                             | CENOZOIC AGE.    |
|                                                                             |                  |
|                                                                             | TERTIARY PERIOD. |
| <i>Mollusca.</i>                                                            |                  |
| <i>Conchifera.</i>                                                          |                  |
| <i>Dimyaria.</i>                                                            |                  |
| <i>Unionidae.</i>                                                           |                  |
| <i>Unio</i> , Retzius, 1788 .....                                           | 206              |
| <i>U. vetustus</i> , Meek, 1860, pl. xxi, figs. 12 a-d.....                 | 206-207          |
| <i>Cyrenidae.</i>                                                           |                  |
| <i>Cyrena</i> , Lamarek, 1818.....                                          | 207              |
| Subgenus <i>Veloritina</i> , Meek, 1872 .....                               | 207              |
| <i>C. (Veloritina) durkei</i> , Meek, 1870, pl. xxi, figs. 13 a and b ..... | 207-208          |
| <i>Sphærium</i> , Scopoli, 1777 .....                                       | 208              |
| <i>Sphærium</i> — (?), White, 1875.....                                     | 208              |
| <i>Gasteropoda.</i>                                                         |                  |
| <i>Pulmonifera.</i>                                                         |                  |
| <i>Basommatophora.</i>                                                      |                  |
| <i>Limnæidae.</i>                                                           |                  |
| <i>Planorbis</i> , Guettard, 1756 .....                                     | 209              |
| <i>P. utahensis</i> , Meek, 1860, pl. xxi, fig. 8 a .....                   | 209              |
| <i>Planorbis</i> — (?), White, 1875 .....                                   | 210              |
| <i>Physidae.</i>                                                            |                  |
| <i>Physa</i> , Draparnaud, 1801 .....                                       | 210              |
| <i>P. bridgerensis</i> , Meek 1872, pl. xxi, fig. 2 a .....                 | 210              |
| <i>P. pleromatæ</i> , n. s., White, 1875, pl. xxi, figs. 1 a and b .....    | 211              |
| <i>Geophila.</i>                                                            |                  |
| <i>Helicidae.</i>                                                           |                  |
| <i>Helix</i> , Linnæus, 1758 .....                                          | 211              |
| <i>H. leidyi</i> , H. & M., 1856, pl. xxi, figs. 3 a-c.....                 | 211              |
| <i>Diæca.</i>                                                               |                  |
| <i>Pectinibranchiata.</i>                                                   |                  |
| <i>TamioGLOSSæ.</i>                                                         |                  |
| <i>Melaniidae.</i>                                                          |                  |
| <i>Goniobasis</i> , Lea, 1862 .....                                         | 212              |
| <i>G. tenuicarinata</i> , M. & H., 1857, pl. xxi, figs. 10 a and b .....    | 212              |
| <i>G. tenera</i> , Hall, sp., 1845, pl. xxi, figs. 11 a-c.....              | 212-213          |
| <i>G. nebrascensis</i> , M. & H., 1856, pl. xxi, figs. 9 a-c .....          | 213-214          |
| <i>Viviparidae.</i>                                                         |                  |
| <i>Viviparus</i> , Montfort, 1810 .....                                     | 214              |
| <i>V. trochiformis</i> , M. & H., 1856, pl. xxi, figs. 4 a-c .....          | 214              |
| <i>V. trochiformis</i> , var. White, 1875, pl. xxi, figs. 5 a and b .....   | 214-215          |

|                                                                        | Page |
|------------------------------------------------------------------------|------|
| <i>V. ionicus</i> , n. s., White, 1875, pl. xxi, figs. 6 a and b ..... | 215  |
| <i>Viriparus</i> — (?) , White, 1875, pl. xxi, figs. 7 a and b .....   | 215  |
| <i>Articulata</i> .                                                    |      |
| <i>Crustacea</i> .                                                     |      |
| <i>Ostracoda</i> .                                                     |      |
| <i>Cypridinidae</i> .                                                  |      |
| <i>Cypris</i> , Müller, 1785 .....                                     | 216  |
| <i>Cypris</i> — (?) , White, 1875 .....                                | 216  |

## 49.

WHITE, C. A. Invertebrate Paleontology of the Plateau Province, together with notice of a few species from localities beyond its limits in Colorado. <United States Geological and Geographical Survey of the Territories: Report on the Geology of the Uintah Mountains. By J. W. Powell. 4to, pp. 74-135. Washington, 1876.

Name. Washington, 1876. 4to, pp. 74-135. Fifty separates printed without title-page, covers, or repaging.

This memoir embraces some general geological discussions, catalogues of fossils, and descriptions of 48 new species.

In subsequent works the author has referred to the Laramie group some of the fossils herein assigned, respectively, to the Cretaceous and Tertiary. Most of the species have since been illustrated by the author in various works.

General observations pp. 75-87.

Catalogue of the fossils collected by the various parties in the field during the years 1868 to 1873, inclusive, pp. 88-107.

Descriptions of new species of Invertebrate fossils from strata of the Carboniferous, Jurassic, Cretaceous, and Tertiary Periods, pp. 107-133.

## CARBONIFEROUS PERIOD.

|                                              |         |
|----------------------------------------------|---------|
| <i>Radiata</i> .                             |         |
| <i>Actinoptera</i> .                         | Page    |
| <i>A. ionicus</i> , Sowerby .....            | 107     |
| <i>A. ionicus</i> , n. s., White, 1876 ..... | 107-108 |
| <i>Bivalvulata</i> .                         |         |
| <i>B. ionicus</i> , M. & W. ....             | 108     |
| <i>B. ionicus</i> , n. s., White, 1876 ..... | 108     |
| <i>B. ionicus</i> , n. s., White, 1876 ..... | 108     |
| <i>B. ionicus</i> , n. s., White, 1876 ..... | 108     |
| <i>Radiata</i> .                             |         |
| <i>R. ionicus</i> .                          |         |
| <i>R. ionicus</i> , n. s., White, 1876 ..... | 109     |
| <i>R. ionicus</i> , n. s., White, 1876 ..... | 109     |

## JURASSIC PERIOD.

|                                              |         |
|----------------------------------------------|---------|
| <i>Radiata</i> .                             |         |
| <i>R. ionicus</i> .                          |         |
| <i>R. ionicus</i> , n. s., White, 1876 ..... | 110     |
| <i>R. ionicus</i> , n. s., White, 1876 ..... | 110     |
| <i>R. ionicus</i> .                          |         |
| <i>R. ionicus</i> , n. s., White, 1876 ..... | 110     |
| <i>R. ionicus</i> , n. s., White, 1876 ..... | 110-111 |

## CRETACEOUS PERIOD.

|                                              |         |
|----------------------------------------------|---------|
| <i>Radiata</i> .                             |         |
| <i>R. ionicus</i> .                          |         |
| <i>R. ionicus</i> , n. s., White, 1876 ..... | 112     |
| <i>R. ionicus</i> , n. s., White, 1876 ..... | 112     |
| <i>R. ionicus</i> , n. s., White, 1876 ..... | 112     |
| <i>R. ionicus</i> , n. s., White, 1876 ..... | 112-113 |
| <i>R. ionicus</i> , n. s., White, 1876 ..... | 113     |
| <i>R. ionicus</i> , n. s., White, 1876 ..... | 113     |
| <i>R. ionicus</i> , n. s., White, 1876 ..... | 113     |
| <i>R. ionicus</i> , n. s., White, 1876 ..... | 113-114 |
| <i>R. ionicus</i> , n. s., White, 1876 ..... | 114-115 |
| <i>R. ionicus</i> , n. s., White, 1876 ..... | 115     |
| <i>R. ionicus</i> , n. s., White, 1876 ..... | 115     |

|                                                                 | Page.   |
|-----------------------------------------------------------------|---------|
| <i>Arca</i> , Linnæus.....                                      | 115     |
| <i>A. ? coalvillensis</i> , n. s., White, 1876.....             | 115-116 |
| <i>Unio</i> , Retzius.....                                      | 116     |
| <i>U. gonionotus</i> , n. s., White, 1876.....                  | 116-117 |
| <i>Cyrena</i> , Lamarck.....                                    | 117     |
| Subgenus <i>Veloritina</i> , Meek.....                          | 117     |
| <i>C. (Veloritina) erecta</i> , n. s., White, 1876.....         | 117     |
| <i>Turnus</i> , Gabb.....                                       | 117     |
| <i>T. sphenoides</i> , n. s., White, 1876.....                  | 117-118 |
| <i>Gasteropoda</i> .                                            |         |
| <i>Rhytrophorus</i> , Meek.....                                 | 118     |
| <i>R. meekii</i> , n. s., White, 1876.....                      | 118-119 |
| <i>Planorbis</i> , Guettard.....                                | 119     |
| Subgenus <i>Bathymorphalus</i> , Agassiz.....                   | 119     |
| <i>P. (Bathymorphalus) kanabensis</i> , n. s., White, 1876..... | 119     |
| <i>Physa</i> , Draparnaud.....                                  | 119     |
| <i>P. kanabensis</i> , n. s., White, 1876.....                  | 119     |
| <i>Helix</i> , Linnæus.....                                     | 120     |
| <i>H. kanabensis</i> , n. s., White, 1876.....                  | 120     |
| <i>Anchura</i> , Conrad.....                                    | 120     |
| <i>A. ruida</i> , n. s., White, 1876.....                       | 120-121 |
| <i>A. prolabiata</i> , n. s., White, 1876.....                  | 121-122 |
| <i>Lunatia</i> , Gray.....                                      | 122     |
| <i>L. utahensis</i> , n. s., White, 1876.....                   | 122     |
| <i>Goniobasis</i> , Lea.....                                    | 122     |
| <i>G. cleburni</i> , n. s., White, 1876.....                    | 122-123 |
| <i>G. chrysaloidea</i> , n. s., White, 1876.....                | 123     |
| <i>Viciparus</i> , Montfort.....                                | 123     |
| <i>V. panguit-chensis</i> , n. s., White, 1876.....             | 123-124 |
| <i>Odontobasis</i> , Meek.....                                  | 124     |
| <i>O. buccinoidea</i> , n. s., White, 1876.....                 | 124     |

## TERTIARY PERIOD.

*Mollusca*.*Oonchifera*.

|                                                    |         |
|----------------------------------------------------|---------|
| <i>Unio</i> , Retzius.....                         | 125     |
| <i>U. petrinus</i> , n. s., White, 1876.....       | 125     |
| <i>U. propheticus</i> , n. s., White, 1876.....    | 125-126 |
| <i>U. brachyopisthus</i> , n. s., White, 1876..... | 126     |
| <i>U. shoshonensis</i> , n. s., White, 1876.....   | 126-127 |
| <i>Corbicula</i> , Mühlfeldt.....                  | 127     |
| <i>C. powelli</i> , n. s., White, 1876.....        | 127-128 |
| <i>Pisidium</i> , Pfeiffer.....                    | 128     |
| <i>P. saginatum</i> , n. s., White, 1876.....      | 128     |
| <i>Mesodesma</i> , Deshayes.....                   | 128     |
| <i>M. bishopi</i> , n. s., White, 1876.....        | 128     |
| <i>Corbula</i> , Bruguière.....                    | 129     |
| <i>C. subundifera</i> , n. s., White, 1876.....    | 129     |

*Gasteropoda*.

|                                                  |         |
|--------------------------------------------------|---------|
| <i>Succinea</i> , Draparnaud.....                | 129     |
| <i>S. papillispira</i> , n. s., White, 1876..... | 129-130 |
| <i>Helix</i> , Linnæus.....                      | 130     |
| <i>H. riparia</i> , n. s., White, 1876.....      | 130     |
| <i>H. peripheria</i> , n. s., White, 1876.....   | 130     |
| <i>Pupa</i> , Lamarck.....                       | 130     |
| <i>P. incolata</i> , n. s., White, 1876.....     | 130-131 |
| <i>P. arenula</i> , n. s., White, 1876.....      | 131     |
| <i>Neritina</i> , Lamarck.....                   | 131     |
| <i>N. volvilineata</i> , n. s., White, 1876..... | 131     |
| <i>Melania</i> , Lamarck.....                    | 131     |
| <i>M. larunda</i> , n. s., White, 1876.....      | 131-132 |
| <i>Hydrobia</i> , Hartmann.....                  | 132     |
| <i>H. recta</i> , n. s., White, 1876.....        | 132     |
| <i>H. utahensis</i> , n. s., White, 1876.....    | 132-133 |
| <i>Viciparus</i> , Montfort.....                 | 133     |



|                                                   | Page.   |
|---------------------------------------------------|---------|
| <i>V. pilcapressus</i> , n. s., White, 1876 ..... | 133     |
| <i>Leioplax</i> , Troschel .....                  | 133     |
| <i>L. ? turricula</i> , n. s., White, 1876 .....  | 133-134 |
| <i>Tulotoma</i> , Haldeman .....                  | 134     |
| <i>T. thompsoni</i> , n. s., White, 1876 .....    | 134     |
| <i>Phorus</i> , Montfort .....                    | 134     |
| <i>P. exoneratus</i> , n. s., White, 1876 .....   | 134-135 |

## 50.

WHITE, C. A. In Memoriam: Fielding Bradford Meek. <Am. Jour. Sci., 3d ser., vol. xiii, pp. 169-171. New Haven, 1877.

Same. New Haven, 1877. 8vo, 3 pages. One hundred separates printed with half-title and repaging.

A brief sketch of the life and labors of the paleontologist, Mr. Meek.

## 51.

WHITE, C. A. Descriptions of new species of fossils from the Paleozoic rocks of Iowa.

<Proc. Acad. Nat. Sci. Phila., for 1876, vol. xxviii, pp. 27-34. Philadelphia, 1877.

Same. Philadelphia, 1876. 8vo., pp. 27-34. Fifty separates printed without title-page, covers, or repaging.

Thirteen species are described as new, and the genus *Strobilocystites* is proposed.

*Radiata.**Actinozoa.*

|                                                    | Page. |
|----------------------------------------------------|-------|
| <i>Chaetetes</i> , Fischer .....                   | 27    |
| <i>C. muscatinensis</i> , n. s., White, 1877 ..... | 27    |
| <i>Monticulipora</i> , d'Orbigny .....             | 27    |
| <i>M. monticula</i> , n. s., White, 1877 .....     | 27    |
| <i>Lophophyllum</i> , E. & H., 1877 .....          | 27    |
| <i>L. expansum</i> , n. s., White, 1877 .....      | 27-28 |

*Echinodermata.*

|                                                    |       |
|----------------------------------------------------|-------|
| <i>Strobilocystites</i> , n. g., White, 1877 ..... | 28    |
| <i>S. calvini</i> , n. s., White, 1877 .....       | 28-29 |
| <i>Megistocrinus</i> , Owen .....                  | 29    |
| <i>M. farnsworthi</i> , n. s., White, 1877 .....   | 29-30 |

*Mollusca.**Brachiopoda.*

|                                                 |    |
|-------------------------------------------------|----|
| <i>Stricklandinia</i> , Billings .....          | 30 |
| <i>S. castellana</i> , n. s., White, 1877 ..... | 30 |

*Conchifera.*

|                                                  |       |
|--------------------------------------------------|-------|
| <i>Paracyclas</i> , Hall .....                   | 31    |
| <i>P. sabini</i> , n. s., White, 1877 .....      | 31    |
| <i>Allorisma</i> , King .....                    | 31    |
| <i>A. marionensis</i> , n. s., White, 1877 ..... | 31-32 |

*Gasteropoda.*

|                                                     |       |
|-----------------------------------------------------|-------|
| <i>Bellerophon</i> , Montfort .....                 | 32    |
| <i>B. boveanant</i> , n. s., White, 1877 .....      | 32    |
| <i>Euomphalus</i> , Sowerby .....                   | 32    |
| <i>E. springealensis</i> , n. s., White, 1877 ..... | 32-33 |

*Pteropoda.*

|                                              |    |
|----------------------------------------------|----|
| <i>Conularia</i> , Miller .....              | 33 |
| <i>C. molaris</i> , n. s., White, 1877 ..... | 33 |

*Cephalopoda.*

|                                              |       |
|----------------------------------------------|-------|
| <i>Cyrtoceras</i> , Goldfuss .....           | 33    |
| <i>C. dictyum</i> , n. s., White, 1877 ..... | 33-34 |

*Articulata.**Vermes.*

|                                            |    |
|--------------------------------------------|----|
| <i>Tentaculites</i> , Schlotheim .....     | 34 |
| <i>T. hoyti</i> , n. s., White, 1877 ..... | 34 |



52.

WHITE, C. A. Paleontological papers, No. 1: Descriptions of Unionidæ and Physidæ, collected by Prof. E. D. Cope, from the Judith River Group of Montana, during the summer of 1876. <Bulletin U. S. Geol. and Geog. Surv. of the Terr., vol. iii, art. xx, pp. 599-602. Washington, 1877.

Same. Washington: Government Printing Office, 1877. 8vo, pp. 599-602. Two hundred separates printed (author's edition) without repaging, but with title-page, and in paper covers, together with Paleontological Papers Nos. 2, 3, 4, and 5.

Six species are described as new. This is the first of a series of short unillustrated articles which reached eleven in number, and then ceased with the suspension of the survey in charge of Dr. Hayden. This form of title has not since been used by the author.

|                                                      | Page.   |
|------------------------------------------------------|---------|
| <i>Unionidæ.</i>                                     |         |
| <i>Unio primævus</i> , n. s., White, 1877.....       | 599-600 |
| <i>Unio cryptorhynchus</i> , n. s., White, 1877..... | 600     |
| <i>Unio senectus</i> , n. s., White, 1877.....       | 600-601 |
| <i>Anodonta propatoris</i> , n. s., White, 1877..... | 601     |
| <i>Physidæ.</i>                                      |         |
| <i>Bulinus atavus</i> , n. s., White, 1877.....      | 601-602 |
| <i>Physa copei</i> , n. s., White, 1877.....         | 602     |

53.

WHITE, C. A. Paleontological Papers No. 2: Descriptions of new species of Uniones, and a new genus of fresh-water Gasteropoda from the Tertiary strata of Wyoming and Utah. <Bulletin U. S. Geol. and Geog. Surv. of the Terr., vol. iii, art. xxi, pp. 603-606. Washington, 1877.

Same. Washington: Government Printing Office, 1877. 8vo, pp. 603-606. Two hundred separates printed (author's edition) without repaging, but with title-page, and in paper covers, together with Paleontological Papers Nos. 1, 3, 4, and 5.

Four species are described as new, two preoccupied names changed, and the genus *Cassiope* proposed.

|                                                 | Page.   |
|-------------------------------------------------|---------|
| <i>Unionidæ.</i>                                |         |
| <i>Unio proavitus</i> , n. s., White, 1877..... | 603-604 |
| <i>U. holmesianus</i> , n. s., White, 1877..... | 604     |
| <i>U. endlichi</i> , n. s., White, 1877.....    | 604-605 |
| <i>U. couesi</i> , [n. s.,] White, 1877.....    | 605     |
| <i>U. meeki</i> , [n. s.,] White, 1877.....     | 605     |
| <i>U. mendax</i> , n. s., White, 1877.....      | 605-606 |
| <i>Ceriphasidæ.</i>                             |         |
| <i>Cassiope</i> , n. g., White, 1877.....       | 606     |

54.

WHITE, C. A. Paleontological Papers No. 3: Catalogue of the Invertebrate Fossils, hitherto published from the fresh- and brackish-water deposits of the western portion of North America. <Bulletin U. S. Geol. and Geog. Surv. of the Terr., vol. iii, art. xxii, pp. 607-614. Washington, 1877.

Same. Washington: Government Printing Office, 1877. 8vo, pp. 607-614. Two hundred separates printed (author's edition) without repaging, but with title-page, and in paper covers, together with Paleontological Papers Nos. 1, 2, 4, and 5.

This paper contains a list of the fossil non-marine invertebrate forms at that time known. They have since been much increased. (See entry No. 115.)

The author has somewhat modified certain views expressed in this paper. These later views are published in entry No. 115.

## 55.

WHITE, C. A. Paleontological Papers No. 4: Comparison of the North American Mesozoic and Cenozoic Unionidæ and associated mollusks with living species. <Bulletin U. S. Geol. and Geog. Surv. of the Terr., vol. iii, art. xxiii, pp. 615-624. Washington, 1877.

Same. Washington: Government Printing Office, 1877. 8vo, pp. 615-624. Two hundred separates printed (author's edition) without repaging, but with title-page, and in paper covers, together with Paleontological Papers Nos. 1, 2, 3, and 5.

The relations of the living Uniones of the Mississippi River system with the fossil forms from western North America are pointed out.

## 56.

WHITE, C. A. Paleontological Papers No. 5: Remarks on the Paleontological characteristics of the Cenozoic and Mesozoic groups as developed in the Green River region. <Bulletin U. S. Geol. and Geog. Surv. of the Terr., vol. iii, art. xxiv, pp. 625-629. Washington, 1877.

Same. Washington: Government Printing Office, 1877. 8vo, pp. 625-629. Two hundred separates printed (author's edition) without repaging, but with title-page, and in paper covers, together with Paleontological Papers Nos. 1, 2, 3, and 4.

Same. Washington: Government Printing Office, 1878. 8vo, pp. 721-724. Two hundred separates printed (author's edition) without repaging, but with title-page, and in paper covers, together with Paleontological Papers No. 6.

## 57.

WHITE, C. A. Circulation of the Blood, subjectively seen. <Am. Journ. of the Med. Sci., vol. lxxiii, n. s., p. 279. Philadelphia, 1877.

The appearance of multitudes of rapidly moving corpuscles to be observed when the eyes are shut, especially when there is more or less cerebral excitement, the author conceives to be due to the impact of the blood corpuscles behind the layer of rods and cones.

## 58.

WHITE, C. A. Paleontological Papers No. 6: Descriptions of new species of Invertebrate fossils from the Laramie Group. < Bulletin U. S. Geol. and Geog. Surv. of the Terr., vol. iv., art. xxviii, pp. 707-719. Washington, 1878.

Same. Washington: Government Printing Office, 1878. 8vo, pp. 707-719. Two hundred separates printed (author's edition) without repaging, but with title-page, and in paper covers, together with Paleontological Papers No. 7.

Nineteen species of mollusks are described as new.

|                                                                 | Page.   |
|-----------------------------------------------------------------|---------|
| <i>Conchifera.</i>                                              |         |
| <i>Volatella</i> , Scopoli .....                                | 707     |
| Subgenus <i>Brachydontes</i> , Swainson .....                   | 707     |
| <i>V. (Brachydontes) regularis</i> , n. s., White, 1877 .....   | 707-708 |
| <i>V. (Brachydontes) laticostata</i> , n. s., White, 1877 ..... | 708     |
| <i>Nuculana</i> , Link .....                                    | 708     |
| <i>N. inclara</i> , n. s., White, 1877 .....                    | 708-709 |
| <i>Anodonta</i> , Cuvier .....                                  | 709     |
| <i>A. parallela</i> , n. s., White, 1877 .....                  | 709     |
| <i>Unio</i> , Retzius .....                                     | 709     |
| <i>U. goniambonatus</i> , n. s., White, 1877 .....              | 709-710 |
| <i>U. aldrichi</i> , n. s., White, 1877 .....                   | 710-711 |
| <i>Orbiclea</i> , Mergel .....                                  | 711     |
| <i>O. cleburni</i> , n. s., White, 1877 .....                   | 711     |
| <i>O. cardiniaformis</i> , n. s., White, 1877 .....             | 711-712 |
| <i>O. obesa</i> , n. s., White, 1877 .....                      | 712-713 |



|                                                              | Page.   |
|--------------------------------------------------------------|---------|
| Subgenus <i>Leptesthes</i> , Meek .....                      | 713     |
| <i>C. [Leptesthes] macropistha</i> , n. s., White, 1877..... | 713     |
| <i>Acella</i> , Haldeman .....                               | 714     |
| <i>A. haldemani</i> , n. s., White, 1877.....                | 714     |
| <i>Physa</i> , Draparnaud .....                              | 714     |
| <i>P. felix</i> , n. s., White, 1877.....                    | 714     |
| <i>Helix</i> , Linnæus .....                                 | 714     |
| <i>H. evanstonensis</i> , n. s., White, 1877 .....           | 714     |
| <i>Neritina</i> , Lamarck .....                              | 715     |
| <i>N. naticiformis</i> , n. s., White, 1877 .....            | 715     |
| Subgenus <i>Velatella</i> , Meek .....                       | 715     |
| <i>N. (Velatella) baptista</i> , n. s., White, 1877 .....    | 715-716 |
| <i>Goniobasis</i> , Lea .....                                | 716     |
| <i>G. endlichti</i> , n. s., White, 1877 .....               | 716     |
| <i>Vicparus</i> , Lamarck .....                              | 716     |
| <i>V. prudentia</i> , n. s., White, 1877 .....               | 716-717 |
| <i>V. couesi</i> , n. s., White, 1877 .....                  | 717-718 |
| <i>Odontobasis</i> , Meek .....                              | 718     |
| <i>O. ? formosa</i> , n. s., White, 1877.....                | 718-719 |

59.

WHITE, C. A. Paleontological Papers No. 7: On the distribution of Molluscan species in the Laramie Group. < Bulletin U. S. Geol. and Geog. Surv. of the Terr. vol. iv, art. xxix, pp. 721-724. Washington, 1878.

The unity of the Judith River, Fort Union, Lignitic, and Bitter Creek series, as the Laramie Group is shown in this paper.

60.

WHITE, C. A. Paleontological papers No. 8. Remarks upon the Laramie group. < Bulletin U. S. Geol. and Geogr. Surv. of the Terr., vol. iv, art. xxxvi, pp. 865-876. Washington, 1878.

Same. Washington: Government Printing Office, 1878. 8vo, pp. 865-876. Two hundred separates printed (author's edition), with title-page and paper covers, but without repaging.

The characteristics of the group and its probable geological age are discussed.

61.

WHITE, C. A., and NICHOLSON, H. A. Bibliography of North American Invertebrate Paleontology; being a report upon the publications that have hitherto been made upon the invertebrate paleontology of North America, including the West Indies and Greenland. By C. A. White, M. D., Paleontologist of the United States Geological Survey, and H. Alleyne Nicholson, M. D., D. Sc., Professor at the University of St. Andrews, Scotland. < Department of the Interior; United States Geological Survey of the Territories. Miscellaneous publications No. 10. Washington: Government Printing Office, 1878. 8vo, 132 pp.

CONTENTS.

Part I. Embracing titles and abstracts of publications made in the United States. By C. A. White, M. D. pp. 7-69.

Part II. Embracing titles and abstracts of publications made in British North America, in the West Indies, and Europe. By H. Alleyne Nicholson, M. D., D. Sc., pp. 71-132.

62.

WHITE, C. A. Change in the habits of Toads. < Nature. 4to, vol. xvii, p. 242. London and New York, 1878.

Observations made in Colorado along irrigating ditches show that the toads there have formed, or reverted to, the habit of diving to the bottom, when disturbed, and remaining there like frogs.

## 63.

WHITE, C. A. Note on the Re-establishment of Forests in Iowa, now in progress. <Amer. Jour. Sci., 3d ser., vol. xvi, p. 323. New Haven, 1878.

This note has reference to an article by Prof. Asa Gray in the same volume of the Journal, entitled, Forestry and Archaeology.

## 64.

WHITE, C. A. Report on the Geology of a portion of Northwestern Colorado. <Tenth Annual Report U. S. Geol. and Geogr. Surv. of the Terr. (for the year 1876), pp. 1-60. One map and one plate. Washington, 1878.

The structure of the eastern end of the Uinta Mountain range is shown, and its relation to the Park range of the Rocky Mountain system explained. The isolated up-thrust mountains are described, and the term "partiversal," as applied to dips, is first used in this report. The results of this work, as shown on the accompanying map, were subsequently incorporated in sheets iv and xi of the Atlas of Colorado and Portions of the Adjacent Territory, published in 1877 by the same survey.

## 65.

WHITE, C. A. Note on the Garter Snake. <Amer. Naturalist, vol. xii, p. 53. Philadelphia, 1878.

This note records a supposed instance of the swallowing of a quantity of air by a garter snake immediately before diving to the bottom of a pool of water.

## 66.

WHITE, C. A. Contributions to Invertebrate Paleontology, No. 1: Cretaceous Fossils of the Western States and Territories. <Eleventh Annual Report U. S. Geol. and Geogr. Surv. of the Terr. (for the year 1877), pp. 273-319, pls. i-x. Washington, 1879.

Same. Washington: Government Printing Office, 1879. 8vo, pp. 273-319, pls. i-x. Two hundred separates printed without repaging, but with title-page and paper covers. The title upon the title-page differs from that which heads the text by the omission of the word "Invertebrate."

Fifty-six species are described and figured, a part of which are new, but most of which had been previously described by different authors, without illustrations. This series of "Contributions" was established for the purpose of illustrating species of fossils previously described, as well as new forms. They number eight in all, and that form of title has not been subsequently used by the author in connection with his work for the United States Survey.

Page.

## Radiata.

## Actinaria.

*Caryophylla*, Lamarck.

*C. johannis*, n. s., White, 1879, pl. vi, figs. 6 a, b..... 274-275

*C. corria*, n. s., White, 1879, pl. vi, figs. 7 a, b..... 275

## Mollusca.

## Conchifera.

*Antres*, Linnaeus..... 275

*C. quadruplicata*, Shumard, 1860, pl. v, fig. 6 a, pl. viii, figs. 3 a, b..... 275-276

*C. (Electronema) belliplicata*, Shumard, 1860, pl. iv, figs. 3 a, b, pl. viii, figs. 2 a, b..... 276-277

*C. (Electronema) rannensis*, White, 1876, pl. ii, figs. 2 a-c..... 277-278

*Esquata*, Say..... 278

*E. callosa*, n. s., White, 1879, pl. i, figs. 1 a, b..... 278

*Placopoma*, Morris & Lycett..... 278

*P. hillardensis*, n. s., White, 1879, pl. vii, fig. 14 a..... 278-279

*Placata*, Lamarck..... 279

*P. histriotheca*, White, 1870, pl. vi, figs. 3 a, b..... 279

*P. caudiciformis*..... 279

*P. parvulus*, White, 1870, pl. iii, fig. 3 a..... 279-280

*Polypoma*, Orpington, Meek..... 280



|                                                                                                    | Page.   |
|----------------------------------------------------------------------------------------------------|---------|
| <i>P. (Oxytoma ?) gastroides</i> , Meek, 1873, pl. x, fig. 1 a                                     | 280-281 |
| Subgenus <i>Pseudoptera</i> , Meek                                                                 | 281     |
| <i>P. (Pseudoptera) propleura</i> , Meek, 1873, pl. x, figs. 2 a-c                                 | 281-284 |
| <i>Inoceramus</i> , Sowerby                                                                        | 284     |
| <i>I. howelli</i> , White, 1876, pl. iv, figs. 1 a-c                                               | 284-285 |
| <i>I. gilberti</i> , White, 1876, pl. iii, figs. 1 a-c                                             | 285     |
| <i>I. oblongus</i> , Meek, 1871, pl. ii, figs. 1 a, b                                              | 285-286 |
| <i>Barbatia</i> , Gray                                                                             | 286     |
| <i>B. coalvillensis</i> , White, 1876, pl. vi, figs. 2 a, b                                        | 286-287 |
| <i>Crassatella</i> , Lamarck                                                                       | 287     |
| <i>C. cimarronensis</i> , n. s., White, 1879, pl. v, figs. 3 a-c                                   | 287-288 |
| <i>Tancredia</i> , Lycett                                                                          | 288     |
| <i>T. ? caelionotus</i> , n. s., White, 1879, pl. v, figs. 2 a-d                                   | 288     |
| <i>Cyrena</i> , Lamarck                                                                            | 289     |
| <i>C. securis</i> , Meek, 1873, pl. iii, figs. 2 a-c                                               | 289     |
| <i>C. inflexa</i> , Meek, 1871, pl. x, figs. 7 a, b                                                | 290     |
| <i>Corbula</i> , Brugniere                                                                         | 290     |
| <i>C. nematophora</i> , Meek, 1873, pl. iii, figs. 4 a-d                                           | 290-291 |
| <i>Cardium</i> , Lianæus                                                                           | 291     |
| <i>C. pauperculum</i> , Meek, 1872, pl. ix, fig. 3 a                                               | 291     |
| <i>C. trite</i> , n. s., White, 1879, pl. v, figs. 4 a, b                                          | 291-292 |
| <i>Cardium</i> — ? , White, 1879, pl. ix, figs. 2 a-c                                              | 292     |
| <i>Trapezium truncatum</i> , Meek, 1871, pl. x, figs. 6 a, b                                       | 292-293 |
| <i>Trapezium ? micronema</i> , Meek, 1873, pl. x, figs. 5 a                                        | 293     |
| <i>Baroda wyomingensis</i> , Meek, 1871, pl. x, figs. 3 a, b                                       | 293-294 |
| <i>Baroda subelliptica</i> , n. s., White, 1879, pl. x, figs. 4 a-d                                | 294-295 |
| <i>Mactra ? holmesii</i> , Meek, 1875, pl. vi, figs. 4 a-c                                         | 295-297 |
| <i>Mactra ? cañonensis</i> , Meek, 1871, pl. ix, figs. 11 a-c                                      | 297-298 |
| <i>Pachymya</i> , Sowerby                                                                          | 298     |
| <i>P. austiniensis</i> , Shumard, pl. viii, figs. 1 a, b, and pl. v, figs. 7 a, b                  | 298     |
| <i>P. ? herseyi</i> , n. s., White, 1879, pl. v, figs. 5 a, b                                      | 298-299 |
| <i>Glycymeris</i> , Lamarck                                                                        | 299     |
| <i>G. berthoudii</i> , n. s., White, 1879, pl. vi, figs. 1 a, b                                    | 299-300 |
| <i>Parapholas</i> , Conrad                                                                         | 300     |
| <i>P. sphenoides</i> , White, 1876, pl. v, figs. 1 a-d                                             | 300-302 |
| <i>Gasteropoda.</i>                                                                                |         |
| <i>Paliurus</i> , Gabb                                                                             | 302     |
| <i>P. pentangulatus</i> , n. s., White, 1879, pl. iv, figs. 4 a, b                                 | 302-303 |
| <i>Anisomyon</i> , M. & H.                                                                         | 303     |
| <i>A. centrale</i> , Meek, 1872, pl. ix, figs. 1 a-d                                               | 303-304 |
| <i>Actæon</i> , Montfort                                                                           | 304     |
| <i>A. weosteri</i> , n. s., White, 1879, pl. vii, figs. 9 a-c                                      | 304     |
| <i>Actæonina</i> , d'Orbigny                                                                       | 305     |
| <i>A. prosocella</i> , n. s., White, 1879, pl. vii, figs. 10 a, b                                  | 305     |
| <i>Turbonilla</i> , Risso                                                                          | 305     |
| <i>T. (Chemnitzia) coalvillensis</i> , Meek, 1873, pl. ix, figs. 5 a, b                            | 305-306 |
| <i>Physa</i> , Draparnand                                                                          | 306     |
| <i>P. carletoni</i> , Meek, 1873, pl. vii, fig. 12 a                                               | 306-307 |
| <i>Physa</i> — ? , White, 1879, pl. vii, fig. 13 a                                                 | 307-308 |
| <i>Neritina</i> , Lamarck                                                                          | 308     |
| <i>N. pisum</i> , Meek, 1873, pl. vii, figs. 11 a-c                                                | 308     |
| <i>N. incompta</i> , White, 1876, pl. vii, figs. 6 a-c                                             | 308-309 |
| <i>N. (Velatella) patelliformis</i> , Meek, 1873, pl. vii, figs. 7 a-d                             | 309     |
| <i>N. (Velatella) patelliformis</i> var. <i>weberensis</i> , White, 1879, pl. vii, figs. 8 a and b | 309-310 |
| <i>Euspira</i> , Agassiz                                                                           | 310     |
| <i>E. coalvillensis</i> , White, 1876, pl. iv, figs. 2 a and b                                     | 310     |
| <i>Anchura</i> , Conrad                                                                            | 311     |
| <i>A. haydeni</i> , n. s., White, 1879, pl. vii, fig. 1 a                                          | 311-312 |
| <i>A. (Drepanocheilus) ruida</i> , White, 1876, pl. vii, figs. 4 a, b                              | 312     |
| <i>A. (Drepanocheilus) mudgeana</i> , n. s., White, 1879, pl. vii, figs. 3 a, b                    | 312-313 |
| <i>A. (Drepanocheilus) prolabiata</i> , White, 1876, pl. vii, fig. 2 a                             | 313-314 |
| <i>Turritella</i> , Lamarck                                                                        | 314     |
| <i>T. marnochi</i> , n. s., White, 1879, pl. vii, figs. 5 a, b                                     | 314-315 |
| <i>T. coalvillensis</i> , Meek, 1873, pl. ix, fig. 4 a                                             | 315-316 |
| <i>T. (Aclis ?) micronema</i> , Meek, 1873, pl. ix, fig. 8 a                                       | 316     |

|                                                                | Page.   |
|----------------------------------------------------------------|---------|
| <i>Eulimella</i> , Forbes.....                                 | 316     |
| <i>E. f. funicula</i> , Meek, 1873, pl. ix, fig. 10 a.....     | 316-317 |
| <i>Fusus</i> , Lamarck.....                                    | 317     |
| <i>F. (Neptunea) gabbi</i> , Meek, 1873, pl. ix, fig. 9 a..... | 317     |
| <i>Admetopria</i> , Meek.....                                  | 317     |
| <i>A. rhomboides</i> , Meek, 1873, pl. ix, figs. 6 a, b.....   | 317-318 |
| <i>A. subfusiformis</i> , Meek, 1873, pl. ix, fig. 7 a.....    | 318-319 |

## 67.

WHITE, C. A. Descriptions of new species of Invertebrate fossils from the Carboniferous and Upper Silurian rocks of Illinois and Indiana. <Proc. Acad. Nat. Sci., Phila., vol. xxx, pp. 29-37. Philadelphia, 1878.

Same. 8 vo., pp. 29-37. Philadelphia, 1878. Thirty separates printed without title-page, covers, or repaging.

| Nine species are described as new.               |  | Page. |
|--------------------------------------------------|--|-------|
| <i>Radiata.</i>                                  |  |       |
| <i>Actinozoa.</i>                                |  |       |
| <i>Baryphyllum</i> , Edwards & Haime.....        |  | 29    |
| <i>B. fungulus</i> , n. s., White, 1878.....     |  | 29-30 |
| <i>Echinodermata.</i>                            |  |       |
| <i>Platyerinus</i> , Miller.....                 |  | 30    |
| <i>P. bonoensis</i> , n. s., White, 1878.....    |  | 30-31 |
| <i>Scaphiocrinus</i> , Hall.....                 |  | 31    |
| <i>S. gibsoni</i> , n. s., White, 1878.....      |  | 31-32 |
| <i>S. gurleyi</i> , n. s., White, 1878.....      |  | 32-33 |
| <i>Lepidesthes</i> , M. & W.....                 |  | 33    |
| <i>L. colletti</i> , n. s., White, 1878.....     |  | 33-34 |
| <i>Mollusca.</i>                                 |  |       |
| <i>Polyzoa.</i>                                  |  |       |
| <i>Ptilodictia</i> , Lonsdale.....               |  | 35    |
| <i>P. triangulata</i> , n. s., White, 1878.....  |  | 35    |
| <i>Conchifera.</i>                               |  |       |
| <i>Astartella</i> , Hall.....                    |  | 35    |
| <i>A. gurleyi</i> , n. s., White, 1878.....      |  | 35-36 |
| <i>Cephalopoda.</i>                              |  |       |
| <i>Nautilus</i> , Breynius.....                  |  | 36    |
| <i>N. danvillensis</i> , n. s., White, 1878..... |  | 36-37 |
| <i>Articulata.</i>                               |  |       |
| <i>Vermes.</i>                                   |  |       |
| <i>Serpula</i> , Linnæus.....                    |  | 37    |
| <i>S. insita</i> , n. s., White, 1878.....       |  | 37    |

## 68.

WHITE, C. A. Anecdote of the Great Horned Owl. <American Naturalist, vol. xiii, p. 783. Philadelphia, 1879.

This anecdote is told to illustrate the precision, rapidity, and extent of the action of the muscles of the neck of that owl. Its authorship is indicated only by the initials "C. A. W."

## 69.

WHITE, C. A. Remarks on the Jura-Trias of Western North America. <Am. Jour. Sci., vol. xvii, 3d ser., pp. 214-218. New Haven, 1879.

Same. New Haven, 1879. 8vo., pp. 214-218. Twenty separates printed without title-page, covers, or repaging.

Reference is made in this article to the Triassic fossils which are described in Paleontological Papers No. 9.

## 70.

WHITE, C. A. Report on the Paleontological Field-work for the season of 1877. <Eleventh Annual Report U. S. Geol. and Geog. Surv. of the Terr. (for the year 1877), pp. 161-272. Washington, 1879.

Same. Washington: Government Printing Office, 1879. 8vo, pp. 161-272. Two hundred separates printed, with title-page and paper covers, but without re-paging.

This report gives results of observations in Colorado, Utah, and Wyoming. The existence of the Green River and Bridger groups south of the Uinta Mountains is first announced in this report; and descriptions of three species of fossils are given in foot-notes.

|                                                                                                                                                             | Page.   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <i>Bulinus disjunctus</i> , n. s., White, 1879.....                                                                                                         | 170     |
| <i>Pinna lakesi</i> , n. s., White, 1879.....                                                                                                               | 181     |
| <i>Corbula dubiosa</i> , n. s., White, 1879.....                                                                                                            | 249     |
| Crow Creek section.....                                                                                                                                     | 164     |
| List of fossils from the valley of Crow Creek, Colorado.....                                                                                                | 165     |
| Notes on the Laramie fossils obtained in the valley of Crow Creek, Colorado.....                                                                            | 165-175 |
| List of the fossils collected from Cretaceous strata in the valley of the Cache à la Poudre, from five to twelve miles west of Greeley, Colo.....           | 175-176 |
| List of Cretaceous fossils collected at Fossil Ridge, three miles southeastward from Spring cañon, and about six miles south of Fort Collins, Colorado..... | 176-177 |
| List of fossils collected in the valley of Little Thompson Creek.....                                                                                       | 177-178 |
| List of the fossils collected at the mouth of Saint Vrain River, Colorado.....                                                                              | 178-179 |
| Notes on the fossils of the Fox Hills group as developed in Colorado, east of the Rocky Mountains.....                                                      | 179-189 |
| Bijou Creek section.....                                                                                                                                    | 189     |
| List of fossils from the valley of Bijou Creek, Colorado.....                                                                                               | 190     |
| Notes on the Laramie fossils collected in the valley of Bijou Creek, Colorado.....                                                                          | 190-197 |
| List of Cretaceous fossils from the vicinity of Golden City and Morrison, Colo.....                                                                         | 197     |
| Notes on the fossils from the vicinity of Golden City and Morrison.....                                                                                     | 179-204 |
| List of Cretaceous fossils collected on Sage Creek, an upper tributary of Yampa River, Colorado.....                                                        | 205     |
| Notes on the Cretaceous fossils of Sage Creek.....                                                                                                          | 205-207 |
| List of Laramie fossils collected in Yampa valley, near Cañon Park, Northwestern Colorado.....                                                              | 207     |
| Notes on the Laramie fossils of Yampa valley.....                                                                                                           | 208-211 |
| List of the Laramie fossils found in the Danforth Hills, Northwestern Colorado.....                                                                         | 211     |
| Notes on the Laramie fossils of Danforth Hills.....                                                                                                         | 211-215 |
| List of Laramie fossils collected at Rock Springs, Wyoming.....                                                                                             | 215     |
| List of Laramie fossils from Bitter Creek valley, two miles west of Point of Rocks station, Wyoming.....                                                    | 215-216 |
| List of the Laramie fossils collected at Point of Rocks Station, Wyoming.....                                                                               | 216     |
| List of the Laramie fossils collected at Black Buttes Station, Wyoming.....                                                                                 | 216-217 |
| Notes on the Laramie fossils of Bitter Creek valley.....                                                                                                    | 217-222 |
| Section of Laramie strata at Black Butte Station.....                                                                                                       | 222     |
| List of Cretaceous fossils from a cañon six miles northwest from White River Indian Agency, Northwestern Colorado.....                                      | 224     |
| Notes on the Cretaceous fossils from near White River Indian Agency.....                                                                                    | 224-226 |
| List of fossils of the Wasatch group collected in White River valley, Colorado.....                                                                         | 226     |
| Notes on the Wasatch fossils of White River valley.....                                                                                                     | 226-229 |
| List of Cretaceous fossils at Dodd's Ranch on Ashley's Fork, Utah.....                                                                                      | 229     |
| Notes on the Cretaceous fossils from Ashley's Fork.....                                                                                                     | 229-232 |
| List of fossils from the Cretaceous series at Coalville, Utah.....                                                                                          | 232-233 |
| Notes on the Cretaceous fossils of Coalville, Utah.....                                                                                                     | 233-241 |
| List of Laramie fossils from Bear River valley, Wyoming.....                                                                                                | 241-242 |
| Notes on Laramie fossils of Bear River valley, Wyoming.....                                                                                                 | 242-248 |
| List of Cretaceous fossils from the valley of Bear River, Wyoming.....                                                                                      | 248     |
| Notes on the Cretaceous fossils of Bear River valley.....                                                                                                   | 248-249 |
| List of Cretaceous fossils collected at Hilliard Station, Wyoming.....                                                                                      | 249     |
| Notes on the Cretaceous fossils of Hilliard Station.....                                                                                                    | 249-251 |
| General discussion.....                                                                                                                                     | 251-265 |
| Table showing the geographical distribution of the Cretaceous species collected during the season of 1877.....                                              | 252-253 |
| Fox Hills Group.....                                                                                                                                        | 252-253 |
| Colorado Group.....                                                                                                                                         | 253     |
| Table showing the geographical distribution of the fossils of the Laramie Group, collected during the season of 1877.....                                   | 255     |
| Catalogue of fossils.....                                                                                                                                   | 265     |



|                                                                                                                           | Page    |
|---------------------------------------------------------------------------------------------------------------------------|---------|
| List of Cretaceous fossils sent by Mr. Arthur Lakes from Bear Creek valley, near Morrison, Colorado .....                 | 285-286 |
| List of fossils sent by Mr. L. C. Wooster from the vicinity of Greeley, Colo .....                                        | 286     |
| List of Cretaceous fossils sent by Mr. J. C. Hersey from Colorado .....                                                   | 286-287 |
| List of Cretaceous fossils sent by Capt. E. L. Berthoud from Colorado .....                                               | 287-288 |
| List of Cretaceous fossils sent by Prof. B. F. Mudge from Dennison, Tex .....                                             | 288     |
| List of Cretaceous fossils sent by Mr. G. W. Marnoch from Helotes, Bexar County, Texas .....                              | 288-289 |
| List of Cretaceous fossils sent by D. H. Walker to the Smithsonian Institution from near Salado, Bell County, Texas ..... | 289-270 |
| Concluding remarks .....                                                                                                  | 270-271 |

## 71.

WHITE, C. A. Paleontological Papers No. 9: Fossils of the Jura-Trias of Southeastern Idaho. <Bulletin U. S. Geol. and Geog. Surv. of the Terr., vol. v, art. v; pp. 105-117. Washington, 1879.

Same. Washington: Government Printing Office, 1879. 8vo, pp. 105-117. Two hundred separates printed (author's edition) without repaging, but with title-page, and in paper covers, together with Paleontological Papers No. 10.

Ten species are described, most of which are new; and the genus *Meekoceras*, Hyatt, is described for the first time in this article.

|                                                   | Page    |
|---------------------------------------------------|---------|
| <i>Brachiopoda</i> .                              |         |
| <i>Terebratula</i> , Llhwyd .....                 | 108     |
| <i>T. semisimplex</i> , n. s., White, 1879 .....  | 108     |
| <i>T. augusta</i> , Hall & Whitfield .....        | 108-109 |
| <i>Conchifera</i> .                               |         |
| <i>Aviculpecten</i> , McCoy .....                 | 109     |
| <i>A. pealei</i> , n. s., White, 1879 .....       | 109-110 |
| <i>A. altus</i> , n. s., White, 1879 .....        | 110     |
| <i>A. idahoensis</i> , Meek .....                 | 110-111 |
| <i>Cephalopoda</i> .                              |         |
| <i>Meekoceras</i> , n. g., Hyatt, 1879 .....      | 111-112 |
| <i>M. aplanatum</i> , n. s., White, 1879 .....    | 112-113 |
| <i>M. mushbachanus</i> , n. s., White, 1879 ..... | 113-114 |
| <i>M. gracilitatis</i> , n. s., White, 1879 ..... | 114-116 |
| <i>M. gracilitatis</i> var., White, 1879 .....    | 116     |
| <i>Arcestes</i> , Süss .....                      | 116     |
| <i>A. ? cirratus</i> , n. s., White, 1879 .....   | 116-117 |
| <i>Arcestes</i> ? ——— ? White, 1879 .....         | 117     |
| <i>Arcestes</i> ? ——— ? White, 1879 .....         | 117     |

## 72.

WHITE, C. A. Paleontological Papers No. 10. Conditions of Preservation of Invertebrate Fossils. <Bulletin U. S. Geol. and Geog. Surv. of the Terr. Vol. v, art. viii, pp. 133-141. Washington, 1879.

Same. Washington: Government Printing Office, 1879. 8vo., pp. 133-141. Two hundred separates printed (author's edition) without repaging, but with title page and with paper covers, together with Paleontological Papers No. 9.

The fact is pointed out that shells of different classes and families which have been fossilized under the same conditions are differently preserved.

## 73.

WHITE, C. A. Paleontological Papers No. 11. Remarks upon Certain Carboniferous Fossils from Colorado, Arizona, Idaho, Utah, and Wyoming, and Certain Cretaceous Corals from Colorado, together with Descriptions of New Forms. <Bulletin U. S. Geol. and Geog. Surv. of the Terr. Vol. v, art. xiv, pp. 209-221. Washington, 1879.



Same. Washington: Government Printing Office, 1879. 8vo., pp. 209-221. Two hundred separates printed (author's edition) without repaging, but with title-page and paper covers. The series of Paleontological Papers closes with this number.

Thirteen species are described, most of which are new. Attention is called to the commingling of Upper and Lower Carboniferous types in the Carboniferous strata of the western portion of North America.

CARBONIFEROUS.

|                                                 | Page.   |
|-------------------------------------------------|---------|
| <i>Actinozoa.</i>                               |         |
| <i>Leptopora</i> , Winchell.....                | 211     |
| <i>L. winchelli</i> , n. s., White, 1879.....   | 211-212 |
| <i>Echinodermata.</i>                           |         |
| <i>Granatocrinus</i> , Troost.....              | 212     |
| <i>G. lotoblastus</i> , White ? 1879.....       | 212-213 |
| <i>Polyzoa.</i>                                 |         |
| <i>Archimedes</i> , Lesneur.....                | 213     |
| <i>Archimedes</i> , ——— ? White, 1879.....      | 213-214 |
| <i>Ptilodyctia</i> , Lonsdale.....              | 214     |
| <i>P. triangulata</i> , White, 1879.....        | 214-215 |
| <i>Brachiopoda.</i>                             |         |
| <i>Retzia</i> , King.....                       | 215     |
| <i>R. woosteri</i> , n. s., White, 1879.....    | 215-216 |
| <i>Conchifera.</i>                              |         |
| <i>Nuculana</i> , Link.....                     | 217     |
| <i>N. obesa</i> , n. s., White, 1879.....       | 216-216 |
| <i>Nucula</i> , Lamarck.....                    | 217     |
| <i>N. perumbonata</i> , n. s., White, 1879..... | 217     |
| <i>Allorisma</i> , King.....                    | 217     |
| <i>A. ? gilberti</i> , n. s., White, 1879.....  | 217-218 |
| <i>Gasteropoda.</i>                             |         |
| <i>Bellerophon</i> , Monfort.....               | 218     |
| <i>B. subpapillosus</i> , White, 1879.....      | 218-219 |
| <i>Murchisonia</i> , D'Archiac.....             | 219     |
| <i>M. terebra</i> , n. s., White, 1879.....     | 219     |
| <i>Pleurotomaria</i> , DeFrance.....            | 219     |
| <i>P. grayvillensis</i> , Norwood & Pratt.....  | 219-220 |

CRETACEOUS FORMS.

|                                                 |         |
|-------------------------------------------------|---------|
| <i>Actinozoa.</i>                               |         |
| <i>Chatetes</i> , Fischer.....                  | 220     |
| <i>C. ? dimissus</i> , n. s., White, 1879.....  | 220-221 |
| <i>Beaumontia</i> , Edwards & Haime.....        | 221     |
| <i>B. ? solitaria</i> , n. s., White, 1879..... | 221     |

74.

WHITE, C. A., and NICHOLSON, H. A. Supplement to the Bibliography of North American Invertebrate Paleontology. < Bulletin U. S. Geol. and Geog. Surv. of the Terr., vol. v, pp. 143-152. Washington, 1879.

Same. Washington: Government Printing Office, 1879, pp. 143-152. Two hundred separates printed (author's edition) with title-page and paper covers, but without repaging.

This supplement embraces works which were published after the publication of the Bibliography, besides some that were inadvertently omitted then.

Part I. Publications made in the United States. By C. A. White, pp. 143-149.

Part II. Publications made in British North America, the West Indies, and Europe. By H. Alleyne Nicholson, pp. 150-152.

75.

WHITE, C. A. Paleontology: Fossils of the Indiana Rocks. < State of Indiana. Second Annual Report of the Department of Statistics and Geology, 471-522, pls. i-xi. Indianapolis, 1880.

Same. In Indiana Geological Report, 1879-'80. From the Second Annual Report of the Bureau of Statistics and Geology. John Collett, Chief of Department. Indianapolis, 1881. 8vo. pp. 103-154, and 11 plates.

This book is an extract of the geological and biological matter from the volume of the preceding entry, repaged and bound in cloth, with new title-page as above.

This work is designed for popular use, and, with the exception of one variety, none of the species described and figured are new. The illustrations are also largely copies of formerly published figures. Forty-nine species of characteristic Silurian, Devonian, and Carboniferous forms are given.

## LOWER SILURIAN.

*Mollusca.* Page.

*Brachiopoda.*

|                                                                                            |         |
|--------------------------------------------------------------------------------------------|---------|
| <i>Strophomena</i> , Rafinesque .....                                                      | 481     |
| <i>S. alternata</i> , Conrad, pl. i, figs. 6 and 7 .....                                   | 481-483 |
| <i>S. planumbona</i> , Hall, pl. ii, figs. 13 and 14 .....                                 | 483-484 |
| <i>Orthis</i> , Dalman .....                                                               | 484     |
| <i>O. subquadrata</i> , Hall, pl. i, figs. 3-5 .....                                       | 484-485 |
| <i>O. occidentalis</i> , Hall, pl. ii, figs. 10-12 .....                                   | 485-487 |
| <i>O. bifurcata</i> , Schlotheim var. <i>acutilirata</i> , Conrad, pl. ii, figs. 5-9 ..... | 487-489 |
| <i>Rhynchonella</i> , Fischer .....                                                        | 489     |
| <i>R. capax</i> , Conrad, pl. i, figs. 9-11 .....                                          | 489-490 |
| <i>R. dentata</i> , Hall, pl. i, figs. 12-14 .....                                         | 490-491 |

*Lamellibranchiata.*

|                                                                                           |         |
|-------------------------------------------------------------------------------------------|---------|
| <i>Megaptera</i> , M. & W .....                                                           | 491     |
| <i>Ambonychia</i> ( <i>Megaptera</i> ) <i>casai</i> , M. & W., pl. i, figs. 1 and 2 ..... | 491-492 |

*Gasteropoda.*

|                                                       |         |
|-------------------------------------------------------|---------|
| <i>Cyclonema</i> , Hall .....                         | 492     |
| <i>C. bilix</i> , Conrad, pl. ii, figs. 3 and 4 ..... | 492-493 |

*Crustacea.**Trilobites.*

|                                                         |         |
|---------------------------------------------------------|---------|
| <i>Oalymene</i> , Brongniart .....                      | 493     |
| <i>O. senaria</i> , Conrad, pl. ii, figs. 1 and 2 ..... | 493-495 |

## UPPER SILURIAN.

*Echinodermata.*

|                                                 |         |
|-------------------------------------------------|---------|
| <i>Eucalyptocrinus</i> , Goldfuss .....         | 495     |
| <i>E. crassus</i> , Hall, pl. iii, fig. 1 ..... | 495-496 |

*Brachiopoda.*

|                                                            |         |
|------------------------------------------------------------|---------|
| <i>Rhynchonella</i> , Fischer .....                        | 496     |
| <i>R. tennesseensis</i> , Roemer, pl. iii, figs. 2-4 ..... | 496-497 |
| <i>Spirifer</i> , Sowerby .....                            | 497     |
| <i>S. radiata</i> , Sowerby, pl. iii, figs. 5 and 6 .....  | 497     |

*Gasteropoda.*

|                                                            |         |
|------------------------------------------------------------|---------|
| <i>Platystoma</i> , Conrad .....                           | 497     |
| <i>P. niagarensis</i> , Hall, pl. iii, figs. 7 and 8 ..... | 497-498 |

*Crustacea.**Trilobites.*

|                                                  |         |
|--------------------------------------------------|---------|
| <i>Cyphaspis</i> , Burmeister .....              | 498     |
| <i>C. christyi</i> , Hall, pl. iii, fig. 9 ..... | 498-499 |

## DEVONIAN.

*Polypi.*

|                                                               |     |
|---------------------------------------------------------------|-----|
| <i>Zaphrentis</i> , Rafinesque & Clifford .....               | 500 |
| <i>Zaphrentis</i> — ? White, 1880, pl. v, figs. 3 and 4 ..... | 500 |
| <i>Favosites</i> , Lamarck .....                              | 500 |
| <i>Favosites</i> — ? White, 1880, pl. v, figs. 1 and 2 .....  | 500 |

*Brachiopoda.*

|                                                          |         |
|----------------------------------------------------------|---------|
| <i>Strophodonta</i> , Hall .....                         | 500     |
| <i>S. demissa</i> , Conrad, pl. iv, figs. 6 and 7 .....  | 500-501 |
| <i>Orthis</i> , Dalman .....                             | 501     |
| <i>O. iowensis</i> , Hall (?), pl. v, figs. 10-12 .....  | 501-502 |
| <i>Atrypa</i> , Dalman .....                             | 502     |
| <i>A. reticularis</i> , Linnaeus, pl. v, figs. 7-9 ..... | 502     |
| <i>Athyris</i> , McCoy .....                             | 502     |
| <i>A. vittata</i> , Hall, pl. iv, figs. 8 and 9 .....    | 502-503 |
| <i>Spirifer</i> , Sowerby .....                          | 503     |

|                                                                                                      | Page.   |     |
|------------------------------------------------------------------------------------------------------|---------|-----|
| <i>S. acuminata</i> , Conrad, pl. iv, figs. 1-3 .....                                                | 503-504 |     |
| <i>S. euritines</i> , Owen, pl. iv, figs. 4 and 5 .....                                              | 504     |     |
| <i>S. gregaria</i> , Clapp, pl. iv, figs. 10 and 11 .....                                            | 504-505 |     |
| <i>Lamellibranchiata.</i>                                                                            |         |     |
| <i>Paracyclas</i> , Hall .....                                                                       | 505     |     |
| <i>P. elliptica</i> var. <i>occidentalis</i> , Hall, pl. v, figs. 5 and 6 .....                      | 505     |     |
| SUB-CARBONIFEROUS.                                                                                   |         |     |
| <i>Polypi.</i>                                                                                       |         |     |
| <i>Lithostrotion</i> , Fleming .....                                                                 |         |     |
| <i>L. mamillare</i> , Castelnau, pl. vi, figs. 1 and 2 .....                                         | 506     |     |
| ( <i>L. canadense</i> , Castelnau), pl. vi, figs. 1 and 2 .....                                      | 506     |     |
| <i>Echinodermata.</i>                                                                                |         |     |
| <i>Tazocerinus</i> , Phillips .....                                                                  | 506     |     |
| <i>T. multibrachiatus</i> , Lyon & Cassady var. <i>colletti</i> , White, 1880, pl. vii, fig. 3 ..... | 506-507 |     |
| <i>Scaphiocrinus</i> , Hall .....                                                                    | 507     |     |
| <i>S. gibsoni</i> , White, 1878, pl. vii, fig. 7 .....                                               | 507-508 |     |
| <i>S. gurleyi</i> , White, 1878, pl. vii, fig. 8 .....                                               | 509     |     |
| <i>Actinocrinus</i> , Miller .....                                                                   | 510     |     |
| <i>A. wachsmuthi</i> , White, 1878, pl. vii, fig. 6 .....                                            | 510     |     |
| <i>Pentremites</i> , Say .....                                                                       | 511     |     |
| <i>P. pyriformis</i> , Say, pl. vii, fig. 9 .....                                                    | 511     |     |
| <i>P. godoni</i> , DeFrance, pl. vii, figs. 10 and 11 .....                                          | 511     |     |
| <i>P. conoides</i> , Hall, pl. vii, fig. 12 .....                                                    | 512     |     |
| <i>Brachiopoda.</i>                                                                                  |         |     |
| <i>Spirifer</i> , Sowerby .....                                                                      | 512     |     |
| <i>S. textus</i> , Hall, pl. vii, figs. 1 and 2 .....                                                | 512-513 |     |
| <i>Pteropoda.</i>                                                                                    |         |     |
| <i>Conularia</i> , Miller .....                                                                      | 513     |     |
| <i>O. missouriensis</i> , Swallow? pl. vi, fig. 4 .....                                              | 513     |     |
| <i>Gasteropoda.</i>                                                                                  |         |     |
| <i>Platyceras</i> , Conrad .....                                                                     | 514     |     |
| <i>P. squilatera</i> , Hall, pl. vii, fig. 5 .....                                                   | 514     |     |
| <i>Cephalopoda.</i>                                                                                  |         |     |
| <i>Goniatites</i> , De Haan .....                                                                    | 514     |     |
| <i>G. oweni</i> , Hall, pl. vii, figs. 3 and 4 .....                                                 | 515     |     |
| <i>Crustacea.</i>                                                                                    |         |     |
| <i>Trilobites.</i>                                                                                   |         |     |
| <i>Phillipsia</i> , Portlock .....                                                                   | 515     |     |
| <i>P. bufo</i> , M. & W., pl. vi, fig. 5 .....                                                       | 515-516 |     |
| COAL MEASURES.                                                                                       |         |     |
| <i>Brachiopoda.</i>                                                                                  |         |     |
| <i>Productus</i> , Sowerby .....                                                                     | 516     |     |
| <i>P. costatus</i> , Sowerby, pl. viii, figs. 7 and 8 .....                                          | 516-517 |     |
| <i>Spirifer</i> , Sowerby .....                                                                      | 517     |     |
| <i>S. cameratus</i> , Morton, pl. viii, fig. 3 .....                                                 | 517-518 |     |
| <i>Lamellibranchiata.</i>                                                                            |         |     |
| <i>Allorisma</i> , King .....                                                                        | 518     |     |
| <i>A. subcuneata</i> , M. & H. ? pl. viii, figs. 1 and 2 .....                                       | 518-519 |     |
| <i>Gasteropoda.</i>                                                                                  |         |     |
| <i>Polyphemopsis</i> , Portlock .....                                                                | 519     |     |
| <i>P. fusiformis</i> , Hall, pl. viii, fig. 6 .....                                                  | 519     |     |
| <i>Pleurotomaria</i> , DeFrance .....                                                                | 519     |     |
| <i>P. tabulata</i> , Hall, pl. viii, figs. 4 and 5 .....                                             | 519-520 |     |
| FOSSIL PLANTS.                                                                                       |         |     |
| <i>Neuropteris</i> .....                                                                             |         | 520 |
| <i>N. hirsuta</i> , Lesqx. pl. ix, figs. 1-3 .....                                                   | 520     |     |
| <i>N. rarineriois</i> , Bunbury, pl. x, figs. 1-3 .....                                              | 520-521 |     |
| <i>Callipteris</i> .....                                                                             |         | 521 |
| <i>C. nullivanti</i> , Lesqx. pl. ix, fig. 4 .....                                                   | 521     |     |
| <i>Annularia</i> .....                                                                               |         | 521 |
| <i>A. longifolia</i> , Brongniart? pl. xi, figs. 1 and 2 .....                                       | 521-522 |     |
| <i>Odontopteris</i> .....                                                                            |         | 522 |
| <i>O. subcuneata</i> , Bunbury? pl. xi, fig. 3 .....                                                 | 522     |     |
| <i>Sphenopteris</i> .....                                                                            |         | 522 |
| <i>S. acuta</i> , Brongniart? pl. xi, fig. 4 .....                                                   | 522     |     |



## 76.

WHITE, C. A. Progress of Invertebrate Paleontology in the United States for the year 1879. <Amer. Nat. vol. xiv, pp. 250-260. Philadelphia, 1880.

Same. Philadelphia, 1880, 8vo, pp. 250-260. One hundred separates printed without title-page, covers, or repaging.

This article, like those for the years 1880, 1881, and 1882, respectively, is a list of the titles of the works published within the year designated, together with remarks upon them.

## 77.

WHITE, C. A. On the Antiquity of Certain Subordinate Types of Fresh-water and Land Mollusca. <Amer. Jour. Sci., 3d ser., vol. xx, pp. 44-49. New Haven, 1880.

Same. New Haven, 1880, 8vo, pp. 44-49. Twenty separates printed without title-page, covers, or repaging.

It is shown that not only were many of the genera of living North American Mollusca established as early as the close of the Cretaceous period, but many of the subgenera were established thus early also.

## 78.

WHITE, C. A. Descriptions of new species of Carboniferous Invertebrate Fossils. <Proc. U. S. Nat. Mus., vol. ii, pp. 252-260, one plate. Washington, 1880.

Same. Washington: Government Printing Office, 1879, 8vo, pp. 252-260, one plate. One hundred and fifty separates printed without title-page, covers, or repaging.

Six species of Echinoderms are described, and the genus *Lecythiocrinus* is proposed.

|                                                                          | Page.   |
|--------------------------------------------------------------------------|---------|
| <i>Actinozoa.</i>                                                        |         |
| <i>Acervularia</i> , Schweigger .....                                    | 256     |
| <i>A. adjunctiva</i> , n. s., White, 1879, plate i, figs. 1-3.....       | 256     |
| <i>Echinodermata.</i>                                                    |         |
| * <i>Lecythiocrinus</i> , n. g., White, 1879 .....                       | 256-257 |
| <i>L. otliculaformis</i> , n. s., White, 1879, pl. i, figs. 4 and 5..... | 257     |
| <i>Eriocrinus</i> , M. & W .....                                         | 257     |
| <i>E. planus</i> , n. s., White, 1879, pl. i, figs. 6 and 7 .....        | 257-258 |
| <i>Cyathocrinus</i> , Miller.....                                        | 258     |
| <i>C. stellatus</i> , n. s., White, 1879, pl. i, figs. 9 and 10 .....    | 258-259 |
| <i>Rhodoocrinus</i> , Miller.....                                        | 259     |
| <i>R. vesperalis</i> , n. s., White, 1879, pl. i, figs. 11 and 12.....   | 259-260 |
| <i>Archaeocrinus</i> , McCoy.....                                        | 260     |
| <i>A. denticulatus</i> , n. s., White, 1879, pl. i, figs. 13 and 14..... | 260     |

## 79.

WHITE, C. A. Note on *Endothyra ornata*. <Proc. U. S. Nat. Mus., vol. ii, p. 291. Washington, 1880.

Same. Washington: Government Printing Office, 1879, 8vo, p. 291. One hundred and fifty separates printed, together with the papers of the two following entries, without title-page, covers, or repaging.

The discovery of that foraminiferous form in the Carboniferous rocks of Wyoming is noticed. It was previously known only in Europe.

## 80.

WHITE, C. A. Note on *Criocardium* and *Ethmocardium*. <Proc. U. S. Nat. Mus., vol. ii, pp. 291-292. Washington, 1880.

Same. Washington: Government Printing Office, 1879, 8vo, pp. 291-292. One hundred and fifty separates printed, together with the papers of the preceding and the following entry, without title-page, covers, or repaging.

The new genus *Ethmocardium* is proposed.

\* *Λγρῦθρον*, a small oil flask.



81.

WHITE, C. A. Descriptions of new Cretaceous Invertebrate Fossils from Kansas and Texas. <Proc. U. S. Nat. Mus., vol. ii, pp. 292-298, pls. i-v. Washington, 1880. Same. Washington: Government Printing Office, 1879, 8vo, pp. 292-298, and five plates. One hundred and fifty separates printed, together with the papers of the two preceding entries, without title-page, covers, or repaging.

Six species are described as new and illustrated..

|                                                                                                   | Page.   |
|---------------------------------------------------------------------------------------------------|---------|
| <i>Mollusca.</i>                                                                                  |         |
| <i>Ostrea</i> , Linnaeus .....                                                                    | 293     |
| Subgenus <i>Alectryonia</i> , Fischer .....                                                       | 293     |
| <i>O. (Alectryonia) blackii</i> , n. s., White, 1879, pl. iv, figs. 1 and 2 .....                 | 293     |
| <i>Exogyra</i> , Say .....                                                                        | 293     |
| <i>E. forniculata</i> , n. s., White, 1879, pl. iv, figs. 3 and 4 .....                           | 293-294 |
| <i>E. winchelli</i> , n. s., White, 1879, pl. ii, figs. 1 and 2, and pl. iii, figs. 1 and 2 ..... | 294-295 |
| <i>Gervillia</i> , DeFrance .....                                                                 | 295     |
| <i>G. mudgeana</i> , n. s., White, 1879, pl. v, figs. 3 and 4 .....                               | 295-296 |
| <i>Pteria</i> , Scopoli .....                                                                     | 296     |
| Subgenus <i>Oxytoma</i> , Meek .....                                                              | 296     |
| <i>P. (Oxytoma) salinensis</i> , n. s., White, 1879, pl. v, figs. 1 and 2 .....                   | 296-297 |
| <i>Pachymya</i> , Sowerby .....                                                                   | 297     |
| <i>P. compacta</i> , n. s., White, 1879, pl. vi, figs. 3 and 4 .....                              | 297     |
| <i>Thracia</i> , Leach .....                                                                      | 297     |
| <i>T. myaformis</i> , n. s., White, 1879, pl. vi, figs. 1 and 2 .....                             | 297-298 |

82.

WHITE, C. A. Report on the Carboniferous Invertebrate Fossils of New Mexico. <Report upon U. S. Geog. and Geol. Surveys West of the 100th Meridian; in charge of Capt. George M. Wheeler, Corps of Engineers, U. S. Army. 4to., vol. iii; Supplement. Geology. Appendix, pp. i-xxxviii, pl. i-ii. Washington, 1881. Same. Washington: Government Printing Office, 1881, 4to, pp. i-xxxviii, and two plates. Seventy-five separates printed, without title-page, covers, or repaging.

This report embraces an annotated catalogue of the species collected at each locality, and also descriptions of seventeen species, a part of which are new.

DESCRIPTIONS OF SPECIES.

|                                                                       |             |
|-----------------------------------------------------------------------|-------------|
| <i>Echinodermata.</i>                                                 |             |
| <i>Archaeocidaris</i> , McCoy .....                                   | xxii        |
| <i>A. triplex</i> , n. s., White, 1881, pl. iv, figs. 3 a-c .....     | xxii-xxiii  |
| <i>Brachiopoda.</i>                                                   |             |
| <i>Orthis</i> , Dalman .....                                          | xxiii       |
| <i>O. resupinoides</i> , Cox † 1857, pl. iii, figs. 2 a, b .....      | xxiii-xxiv  |
| <i>Polyzoa.</i>                                                       |             |
| <i>Ptilodictya</i> , Lonsdale .....                                   | xxiv        |
| <i>P. triangulata</i> , White, 1878, pl. iv, figs. 2 a-c .....        | xxiv-xxv    |
| <i>Conchifera.</i>                                                    |             |
| <i>Myalina</i> , de Koninck .....                                     | xxv         |
| <i>M. permiana</i> , Swallow, 1[8]58, pl. i[1], figs. 1 a-d .....     | xxv-xxvii   |
| <i>Pleurophorus</i> , King .....                                      | xxvii       |
| <i>P. subcostatus</i> , M. & W., 1866, pl. iii, fig. 8 a .....        | xxvii       |
| <i>Pteropoda.</i>                                                     |             |
| <i>Conularia</i> , Miller .....                                       | xxviii      |
| <i>C. crustula</i> , White, 1880, pl. iii, figs. 4 a, b .....         | xxviii      |
| <i>Gasteropoda.</i>                                                   |             |
| <i>Soleniscus</i> , M. & W. ....                                      | xxviii      |
| <i>S. brevis</i> , n. s., White, 1881, pl. iv, figs. 5 a-c .....      | xxviii-xxix |
| <i>S. planus</i> , n. s., White, 1881, pl. iv, figs. 4 a-c .....      | xxix-xxx    |
| <i>Bellorophon</i> , Montfort .....                                   | xxx         |
| <i>B. inspeciosus</i> , n. s., White, 1881, pl. iv, figs. 1 a-d ..... | xxx-xxxi    |
| <i>Pleurotomaria</i> , DeFrance .....                                 | xxxi        |
| <i>P. perizomata</i> , n. s., White, 1881, pl. iii, figs. 5 a-c ..... | xxxi        |
| <i>Murchisonia</i> , d'Archiac .....                                  | xxxi        |
| <i>M. copei</i> , n. s., White, 1881, pl. iii, figs. 10 a, b .....    | xxxi-xxxii  |

|                                                                           | Page.        |
|---------------------------------------------------------------------------|--------------|
| <i>Rotella</i> , Lamarck.....                                             | xxxii        |
| <i>R. verruculifera</i> , n. s., White, 1881, pl. iv, figs. 7 a-d.....    | xxxii-xxxiii |
| <i>Naticopsis</i> , McCoy.....                                            | xxxiii       |
| <i>N. wheeleri</i> , Swallow, var. White, 1881, pl. iv, figs. 6 a, b..... | xxxiii-xxxiv |
| <i>N. monilifera</i> , White, 1880, pl. iii, figs. 3 a-d.....             | xxxiv-xxxv   |
| <i>N. altonensis</i> , McCheaney, pl. iii, fig. 6a.....                   | xxxv         |
| <i>Loxonema</i> , Phillips.....                                           | xxxv         |
| <i>L. rugosa</i> , M. & W., pl. iii, fig. 7 a.....                        | xxxv         |
| <i>Actis</i> , Loven.....                                                 | xxxv         |
| <i>A. ? stevensoni</i> , n. s., White, 1881, pl. iii, figs. 9 a, b.....   | xxxv-xxxvi   |

## 83.

WHITE, C. A. Progress of Invertebrate Paleontology in the United States for the year 1880. <Amer. Nat., vol. xvi, pp. 273-279. Philadelphia, 1881.

Same. Philadelphia, 1881, 8vo, pp. 273-279. One hundred separates printed without title-page, covers, or repaging.

This article is similar to that of entry No. 74.

## 84.

WHITE, C. A. English Sparrows refusing to eat worms. <Amer. Nat., vol. xv, pp. 671-672. Philadelphia, 1881.

It is observed that the sparrows refused to eat earth worms, which are favorite food with other birds, when they come to the surface after rains.

## 85.

WHITE, C. A. Note on the occurrence of *Productus giganteus* in California. <Proc. U. S. Nat. Mus., vol. iii, pp. 46-47, pl. i. Washington, 1881.

Same. Washington: Government Printing Office, 1880. 8vo, pp. 46-47, and one plate. One hundred and fifty separates printed, together with the papers of the two following entries, without title-page, covers, or repaging.

The volume was first distributed without the plate; but the latter was afterward printed and distributed.

## 86.

WHITE, C. A. Note on *Acrothele*. <Proc. U. S. Nat. Mus., vol. iii, p. 47. Washington, 1881.

Same. Washington: Government Printing Office, 1880, 8vo, p. 47. One hundred and fifty separates printed, together with the last, and the next following entry.

It is shown that *Aerotreta subsidua*, White, from Southern Utah, really belongs to the genus *Acrothele*, Linnarsson.

## 87.

WHITE, C. A. Description of a new Cretaceous *Pinna* from New Mexico. <Proc. U. S. Nat. Mus., vol. iii, pp. 47-48. Washington, 1881.

Same. Washington: Government Printing Office, 1880, 8vo, pp. 47-48. One hundred and fifty separates printed, together with the papers of the two preceding entries, without-title page, covers, or repaging.

The author now thinks that the proposed new species (*Pinna stevensoni*) is only a variety of *P. petrina*, White.

|                                                   | Page. |
|---------------------------------------------------|-------|
| <i>Pinna stevensoni</i> , n. s., White, 1880..... | 47-48 |

## 88.

WHITE, C. A. Note on the occurrence of *Stricklandinia salteri* and *S. davidsoni* in Georgia. <Proc. U. S. Nat. Mus., vol. iii, pp. 48-49. Washington, 1881.

Same. Washington: Government Printing Office, 1880, 8vo, pp. 48-49. One hundred and fifty separates printed without title-page, covers, or repaging.



89.

WHITE, C. A. Description of a very large fossil Gasteropod from the State of Puebla, Mexico. <Proc. U. S. Nat. Mus., vol. iii, pp. 140-142, and one plate. Washington, 1881.

Same. Washington: Government Printing Office, 1880, 8vo, pp. 140-142, and one plate. One hundred and fifty separates printed without title-page, covers, or repaging.

The species described is from strata believed to be of Cretaceous age.

|                                                                     | Page.   |
|---------------------------------------------------------------------|---------|
| <i>Tylostoma</i> , Sharpe.....                                      | 141     |
| <i>T. princeps</i> , n. s., White, 1880, pl. ii, figs. 1 and 2..... | 141-142 |

90.

WHITE, C. A. Descriptions of new Invertebrate fossils from the Mesozoic and Cenozoic rocks of Arkansas, Wyoming, Colorado, and Utah. <Proc. U. S. Nat. Mus., vol. iii, pp. 157-162. Washington, 1881.

Same. Washington: Government Printing Office, 1880, 8vo, pp. 157-162. One hundred and fifty separates printed without title-page, covers, or repaging.

Nine species are described as new; but none are illustrated.

|                                                                 | Page.   |
|-----------------------------------------------------------------|---------|
| <i>Mollusca.</i>                                                |         |
| <i>Conchifera.</i>                                              |         |
| <i>Pteria</i> , Scopoli.....                                    | 157     |
| Subgenus <i>Oxytoma</i> , Meek.....                             | 157     |
| <i>P. (Oxytoma) erecta</i> , n. s., White, 1880.....            | 157-158 |
| <i>Solemya</i> , Lamarck.....                                   | 158     |
| <i>S. bilix</i> , n. s., White, 1880.....                       | 158     |
| <i>Lucina</i> , Bruguière.....                                  | 158     |
| <i>L. profunda</i> , n. s., White, 1880.....                    | 158-159 |
| <i>Gasteropoda.</i>                                             |         |
| <i>Planorbis</i> , Guettard.....                                | 159     |
| <i>P. æqualis</i> , n. s., White, 1880.....                     | 159     |
| Subgenus <i>Gyraulus</i> , Agassiz.....                         | 159     |
| <i>Planorbis (Gyraulus) militaris</i> , n. s., White, 1880..... | 159-160 |
| <i>Limnæa</i> , Lamarck.....                                    | 160     |
| Subgenus <i>Leptolimnæa</i> , Swainson.....                     | 160     |
| <i>Limnæa (Leptolimnæa) minuscula</i> , n. s., White, 1880..... | 160     |
| <i>Helix</i> , Linnaeus.....                                    | 160     |
| Subgenus <i>Patula</i> , Haldeman.....                          | 160     |
| <i>H. (Patula) sepulta</i> , n. s., White, 1880.....            | 160     |
| <i>Articulata.</i>                                              |         |
| <i>Vermes.</i>                                                  |         |
| <i>Spirorbis</i> , Lamarck.....                                 | 161     |
| <i>S. dickhauti</i> , n. s., White, 1880.....                   | 161     |
| <i>Crustacea.</i>                                               |         |
| <i>Callianassa</i> , Leach.....                                 | 161     |
| <i>C. ulrichi</i> , n. s., White, 1880.....                     | 161-162 |

91.

WHITE, C. A. [Review of] A. G. Wetherby: Description of new fossils from the Lower Silurian and Subcarboniferous rocks of Ohio and Kentucky. (Journ. Cincinnati Soc. Nat. History, vol. iv, no. 1 [April, 1881], pp. 77-85, pl. ii.) <Neues Jahrbuch für Mineralogie, Geologie, und Palæontologie, ii Band, p. 408. Stuttgart, 1881.

92.

WHITE, C. A. [Review of] A. G. Wetherby: Description of new fossils from the Lower Silurian and Subcarboniferous rocks of Kentucky. (Journ. Cincinnati Soc. Nat. History, vol. iv, no. 2 [July, 1881], pp. 177-179, pl. v.) <Neues Jahrbuch für Mineralogie, Geologie, und Palæontologie, ii Band, p. 408. Stuttgart, 1881.

## 93.

WHITE, C. A. [Review of] S. A. Miller: New species of fossils and remarks upon others from the Niagara Group of Illinois. (Journ. Cincinnati Soc. Nat. History, vol. iv, no. 2 [July, 1881], pp. 166-176, pl. iv.) < Neues Jahrbuch für Mineralogie, Geologie, und Paläontologie. ii Band, p. 408. Stuttgart, 1881.

## 94.

WHITE, C. A. Fossils of the Indiana rocks, No. 2. < Indiana, Department of Geology and Natural History, Eleventh Annual Report. John Collet, State Geologist, 1881; pp. 347-401, pls. xxxvii-lv. Indianapolis, 1882.

Same. Indianapolis, 1882; 8vo, pp. 347-401, with 19 plates and the index for the whole volume. Fifty separates printed without title-page or repaging, and without date.

The object of his memoir, like that of entry No. 75, is largely that of popular instruction. The greater part of the species here described and figured are republished from the works of other authors, only four of the species being new. Twelve of the plates are devoted to figures of fossil corals, which figures were engraved many years ago by J. W. Van Cleave, to accompany a work on fossil corals by himself, which he did not live to publish or to finish. There are 29 species of these corals here described and figured, besides 20 other species, all from Paleozoic rocks.

## Description of fossils.

## UPPER SILURIAN.

## Mollusca.

## Cephalopoda.

|                                                                                            | Page    |
|--------------------------------------------------------------------------------------------|---------|
| <i>Gyroceras</i> , Meyer .....                                                             | 156     |
| <i>G. elrodi</i> , n. s., White, 1882, pl. xxxvii, fig. 1, and pl. xxxviii, figs. 2-4..... | 156-158 |
| <i>Orthoceras</i> , Breynius .....                                                         | 158     |
| <i>O. annulatum</i> , Sowerby, 1818, pl. xxxviii, fig. 1.....                              | 158     |

## SUBCARBONIFEROUS.

## Gastropoda.

|                                                                        |         |
|------------------------------------------------------------------------|---------|
| <i>Patella</i> , Linnaeus .....                                        | 159     |
| <i>P. levettei</i> , n. s., White, 1882, pl. xxxix, figs. 4 and 5..... | 159     |
| <i>Bellerophon</i> , Montfort .....                                    | 159     |
| <i>B. sublaevis</i> , Hall, 1858, pl. xl, figs. 5-7 .....              | 159-160 |
| <i>B. gibsoni</i> , n. s., White, 1882, pl. xli, figs. 4-6.....        | 160-161 |

## Brachiopoda.

|                                                           |     |
|-----------------------------------------------------------|-----|
| <i>Terebratulida</i> , Lillwyd .....                      | 161 |
| <i>T. formosa</i> , Hall, 1858, pl. xxxix, figs. 6-8..... | 161 |

## Bryozoa.

|                                                   |         |
|---------------------------------------------------|---------|
| <i>Archimedes</i> , Lesueur .....                 | 161     |
| <i>A. laza</i> , Hall, 1857, pl. xli, fig. 7..... | 161-162 |

## Radiata.

## Echinodermata.

|                                                                             |         |
|-----------------------------------------------------------------------------|---------|
| <i>Lepidesthes</i> , M. & W. ....                                           | 162     |
| <i>L. colletti</i> , White, 1878, pl. xli, figs. 2 and 3.....               | 162-163 |
| <i>Agaricoerinus</i> , Troost.....                                          | 163     |
| <i>A. springeri</i> , n. s., White, 1882, pl. xl, figs. 2-4.....            | 163-164 |
| <i>Onychocrinus</i> , Lyon & Casseday .....                                 | 165     |
| <i>O. exsculptus</i> , Lyon & Casseday, 1860, pl. xl, fig. 1 .....          | 165-166 |
| <i>O. ramulosus</i> , Lyon & Casseday, 1859, pl. xxxix, figs. 2 and 3 ..... | 166-167 |
| <i>Cyathocrinus</i> , Miller .....                                          | 167     |
| <i>C. multibrachiatus</i> , Lyon & Casseday, 1859, pl. xxxix, fig. 1.....   | 167     |
| <i>Platycrinus</i> , Miller.....                                            | 169     |
| <i>P. hemisphericus</i> , M. & W., 1865, pl. xli, fig. 1.....               | 169-170 |

## Protista.

## Forifera.

|                                                                  |         |
|------------------------------------------------------------------|---------|
| <i>Palæacis</i> , Haime .....                                    | 169     |
| <i>P. cuneatus</i> , M. & W., 1860, pl. xli, figs. 8 and 9 ..... | 169-170 |



|                                                                   | Page.                  |
|-------------------------------------------------------------------|------------------------|
| <b>Mollusca.</b>                                                  |                        |
| <i>Gasteropoda.</i>                                               |                        |
| <i>Polyphemopsis</i> , Portlock .....                             | 370                    |
| <i>P. nitidula</i> , M. & W., pl. xlii, figs. 7 and 8 .....       | 370-371                |
| <i>Conchifera.</i>                                                |                        |
| <i>Nucula</i> , Lamarck .....                                     | 371                    |
| <i>N. ventricosa</i> , Hall, 1858, pl. xlii, figs. 9 and 10 ..... | 371-372                |
| <i>Brachiopoda.</i>                                               |                        |
| <i>Spirifer</i> , Sowerby .....                                   | 372                    |
| Subgenus <i>Martinia</i> , McCoy .....                            | 372                    |
| <i>S. (Martinia) lineatus</i> , Martin, pl. xlii, figs. 4-6 ..... | 372-373                |
| <i>Productus</i> , Sowerby .....                                  | 373                    |
| <i>P. punctatus</i> , Martin, pl. xlii, figs. 1-3 .....           | 373                    |
|                                                                   | <b>FOSSIL PLANTS.</b>  |
| <i>Taonurus.</i>                                                  |                        |
| <i>T. colletti</i> , Lesquereux, 1870, pl. xliii, fig. 1 .....    | 374                    |
| <i>Sphenophyllum</i> , Brongniart .....                           | 374                    |
| <i>S. schlotheimi</i> , Brongniart, pl. xliii, fig. 2 .....       | 374-375                |
| <i>S. emarginatum</i> , Brongniart, pl. xliii, fig. 3 .....       | 375                    |
| Van Cleve's Fossil Corals, identified by C. A. White, M. D. ....  | 375                    |
|                                                                   | <b>LOWER SILURIAN.</b> |
| <i>Streptelasma</i> , Hall .....                                  | 376                    |
| <i>S. corniculum</i> , Hall, pl. li, figs. 2-4 .....              | 376                    |
| <i>Palaeophyllum</i> , Billings .....                             | 377                    |
| <i>P. divaricans</i> , Nicholson, pl. lii, fig. 4 .....           | 377-378                |
| <i>Favistella</i> , Hall .....                                    | 378                    |
| <i>F. stellata</i> , Hall, pl. xlv, figs. 1 and 2 .....           | 378                    |
| <i>Protarea</i> , Edwards & Haime .....                           | 378                    |
| <i>P. vetusta</i> , Edwards & Haime, pl. xlix, fig. 4 .....       | 378-379                |
| <i>Constellaria</i> , Dana .....                                  | 379                    |
| <i>C. antheloidea</i> , Hall, pl. xlv, figs. 1-3 .....            | 379-380                |
| <i>Monticulipora</i> , d'Orbigny .....                            | 380                    |
| <i>M. frondosa</i> , d'Orbigny, pl. xlviii, figs. 2 and 3 .....   | 380-381                |
|                                                                   | <b>UPPER SILURIAN.</b> |
| <i>Lyellia</i> , Edwards & Haime .....                            | 381                    |
| <i>L. americana</i> , Edwards & Haime, pl. xlvii, fig. 5 .....    | 381-382                |
| <i>Halysites</i> , Fischer .....                                  | 382                    |
| <i>H. catenulata</i> , Linnæus, pl. xlv, figs. 4-7 .....          | 382                    |
| <i>Heliolites</i> , Dana .....                                    | 383                    |
| <i>H. elegans</i> , Hall, pl. xlviii, fig. 4 .....                | 383                    |
| <i>Favosites</i> , Lamarck .....                                  | 383                    |
| <i>F. favorus</i> , Goldfuss, pl. lii, figs. 1 and 2 .....        | 383-384                |
| <i>Cladopora</i> , Hall .....                                     | 384                    |
| <i>C. reticulata</i> , Hall, pl. xlvii, fig. 6 .....              | 384-385                |
| <i>Clathropora</i> , Hall .....                                   | 385                    |
| <i>C. frondosa</i> , Hall, pl. lv, fig. 3 .....                   | 385-386                |
|                                                                   | <b>DEVONIAN.</b>       |
| <i>Acervularia</i> , Schweigger .....                             | 386                    |
| <i>A. davidsoni</i> , Edwards & Haime, pl. xlix, fig. 2 .....     | 386                    |
| <i>Diphyphyllum</i> , Lonsdale .....                              | 387                    |
| <i>D. archiaci</i> , Billings, pl. i, fig. 1 .....                | 387                    |
| <i>D. stramineum</i> , Billings, pl. xviii, fig. 1 .....          | 388                    |
| <i>D. arundinaceum</i> , Billings, pl. ii, fig. 1 .....           | 389-390                |
| <i>Eridophyllum</i> , Edwards & Haime .....                       | 390                    |
| <i>E. strictum</i> , Edwards & Haime, pl. xlix, fig. 1 .....      | 390-391                |
| <i>Cyatophyllum</i> , Lonsdale .....                              | 391                    |
| <i>C. vesiculorum</i> , Goldfuss, pl. lv, figs. 1 and 2 .....     | 391-392                |
| <i>Zaphrentis</i> , Rafinesque .....                              | 393                    |
| <i>Z. rafinesquii</i> , Edwards & Haime, pl. xlv, figs. 3-5 ..... | 393                    |
| <i>Amplexus</i> , Sowerby .....                                   | 393                    |

|                                                                                 | Page    |
|---------------------------------------------------------------------------------|---------|
| <i>A. vandelli</i> , Edwards & Haime, pl. xlv, figs. 1 and 2.....               | 393-394 |
| <i>Favosites</i> , Lamarck.....                                                 | 394     |
| <i>F. basaltica</i> , Goldfuss, pl. liv, fig. 1.....                            | 394-395 |
| <i>F. polymorpha</i> , Goldfuss, pl. l, fig. 2, pl. liii, figs. 1 and 2.....    | 395     |
| <i>F. polymorpha</i> var. <i>dubia</i> , Nicholson, 1874, pl. liii, fig. 3..... | 396     |
| <i>Favosites</i> — (?) White, 1882, pl. liv, fig. 2.....                        | 396     |
| <i>Fistulipora</i> , McCoy.....                                                 | 396     |
| <i>F. canadensis</i> , Billings, pl. xlvii, figs. 1 and 2.....                  | 396-397 |
| <i>Alveolites.</i>                                                              |         |
| <i>A. goldfussi</i> , Billings, pl. liv, fig. 3.....                            | 397-398 |
| <i>Striatopora</i> , Hall.....                                                  | 398     |
| <i>S. linnaeana</i> , Billings, pl. xlvii, fig. 7.....                          | 398     |
| <i>Syringopora</i> , Goldfuss.....                                              | 398     |
| <i>S. perlegans</i> , Billings, pl. xlix, fig. 3.....                           | 398-399 |
| <i>S. maclurei</i> , Billings, pl. xlvii, fig. 3.....                           | 399-400 |
| <i>Stromatopora</i> , Blainville.....                                           | 400     |
| <i>S. pustulifera</i> , Winchell ? pl. liii, figs. 4 and 5.....                 | 400     |

## SUBCARBONIFEROUS.

|                                                       |     |
|-------------------------------------------------------|-----|
| <i>Lithostrotion</i> , Fleming.....                   | 401 |
| <i>L. mamillare</i> , Castelnau, pl. lii, fig. 3..... | 401 |

## 95.

WHITE, C. A. Progress of Invertebrate Paleontology in the United States for the year 1881. <American Naturalist, vol. xvi, pp. 887-891. Philadelphia, 1882.  
Same. Philadelphia, 1882. 8vo, pp. 887-891. One hundred separates printed without title page, covers, or repaging.

This article is similar to those of entries 74 and 81.

## 96.

WHITE, C. A. Artesian Wells upon the Great Plains. <North American Review, vol. 135, pp. 187-195. New York, 1882.  
Same. New York, 1882. 8vo, 9 pages. Fifty separates printed without title-page or covers, but repaged.

This article gives some results of the examination of the region of Eastern Colorado by a commission appointed by the U. S. Commissioner of Agriculture, of which the author was chief.

## 97.

WHITE, C. A. Tanganyika Shells. <Nature, 4to, vol. xxv, pp. 101-102. London and New York, 1882.

This note suggests the probable identity of *Paramelania* Smith, a proposed molluscan sub-genus now living in Lake Tanganyika, Africa, with the fossil genus *Pyrgulifera* Meek, from the Laramie Group of Southwestern Wyoming.

## 98.

WHITE, C. A. On certain conditions attending the geological descent of some North American types of fresh-water gill-bearing Mollusks. <Amer. Jour. Sci., 3d ser., vol. xxiii, pp. 382-386. New Haven, 1882.  
Same. New Haven, 1882. 8vo, pp. 382-386. Twenty separates printed without title-page, covers, or repaging.

The substance, not the words, of this article is an extract from parts of an illustrated work, the title of which is given in entry No. 105. The opinion is advanced that the present gill-bearing fauna of the Mississippi River system has been derived in part from the Laramie sea and the fresh-water lakes which succeeded it, by means of the persistence of their outlets as rivers, down to the present time.

99.

WHITE, C. A. Artesian Wells upon the Great Plains; being the report of a geological commission appointed to examine a portion of the Great Plains east of the Rocky Mountains, and report upon the localities deemed most favorable for making experimental borings. Department of Agriculture, pp. 1-38, pl. i. Washington, 1882.

The map is a copy of part of sheet xi of the atlas of Colorado, published by the United States Geological Survey of the Territories.

100.

WHITE, C. A. On certain Cretaceous fossils from Arkansas and Colorado. <Proc. U. S. National Museum, vol. iv, pp. 136-139, pl. i. Washington, 1882.

Same. Washington, Government Printing Office, 1882. 8vo, pp. 136-139, and one plate. One hundred and fifty separates printed without title-page, covers, or repaging.

Six species are described and figured, two of which are new.

|                                                                                 | Page. |
|---------------------------------------------------------------------------------|-------|
| <i>Ocellianassa ulrichi</i> , White, 1880, pl. i, figs. 10 and 11.....          | 137   |
| <i>Tubulostium dickhauti</i> , White, 1880, pl. i, figs. 12 and 13.....         | 138   |
| <i>Cantharus julesburgensis</i> , n. s., White, 1882, pl. i, figs. 1 and 2..... | 138   |
| <i>Lucina profunda</i> , White, 1880, pl. i, figs. 5 and 6.....                 | 138   |
| <i>Lucina cleburni</i> , n. s., White, 1882, pl. i, figs. 3 and 4.....          | 139   |
| <i>Solemya bilia</i> , White, 1880, pl. i, fig. 9.....                          | 139   |
| <i>Pteria (Omytona) erecta</i> , White, 1880, pl. i, figs. 7 and 8.....         | 139   |

101.

WHITE, C. A. [Review of] S. A. Miller: Description of some new and remarkable crinoids and other fossils of the Hudson River Group, and notice of *Strotocrinus bloomfieldensis*. (Journ. Cincinnati Soc. Nat. History. Vol. iv, No. 1 [April, 1881], pp. 69-77, pl. i.) <Neues Jahrbuch für Mineralogie, Geologie, und Paläontologie. I Band, p. 307. Stuttgart, 1881.

102.

WHITE, C. A. [Review of] Henry Newton, E. M., and Walter P. Jenney, E. M.: Report on the Geology and resources of the Black Hills of Dakota. 4to, pp. 1-555, with Atlas. Washington, 1880. <Neues Jahrbuch für Mineralogie, Geologie, und Paläontologie. II Band, pp. 216-218. Stuttgart, 1882.

103.

WHITE, C. A. [Review of] United States Geological Survey: Annual Report for 1881 of J. W. Powell, Director. Imperial 8vo, pp. 1-558, lxi plates, and 32 woodcuts. Washington, 1882. <Neues Jahrbuch für Mineralogie, Geologie, und Paläontologie. II Band, pp. 365-366. Stuttgart, 1882.

104.

WHITE, C. A. Contributions to Invertebrate Paleontology, No. 2: Cretaceous fossils from the Western States and Territories. <Twelfth Annual Report of the United States Geological and Geographical Survey of the Territories (for the year 1878). pp. 1-33; appendix, pp. 38, 39, pls. xi-xviii. Washington, 1883.

Same. Washington: Government Printing Office, 1880. 8vo, pp. 1-39, and plates 11-18. Two hundred separates printed (author's edition) without repaging, but with title-page and covers, together with Contributions to Invertebrate Paleontology, Nos. 3, 4, 5, 6, 7, and 8. In 1883 100 additional copies of the same were printed in the same form. The title-page in both these cases differs from the title which heads the text by the omission of the word "Invertebrate."

Thirty-seven species are described and figured, five of which are new. On plate xviii ten species are also illustrated which were originally published by Dr. Shumard, but were never before illustrated.



## CRETACEOUS.

|                                                                                               | Page. |
|-----------------------------------------------------------------------------------------------|-------|
| <i>Actinozoa.</i>                                                                             |       |
| <i>Charaxes</i> Fischer.....                                                                  | 7     |
| <i>C. ? dimisus</i> , White, 1879, pl. xii, fig. 14 a.....                                    | 7     |
| <i>Beaumontia</i> , Edwards & Haime.....                                                      | 8     |
| <i>B. ? solitaria</i> , n. s., White, 1880, pl. xii, figs. 13 a-c.....                        | 8     |
| <i>Echinodermata.</i>                                                                         |       |
| <i>Ophioderma</i> .....                                                                       | 8     |
| <i>O. ? bridgerensis</i> , Meek, 1873, pl. xii, fig. 12 a.....                                | 8-9   |
| <i>Conchifera.</i>                                                                            |       |
| <i>Ostrea</i> , Linnæus.....                                                                  | 9     |
| <i>O. soleniscus</i> , Meek, 1873, pl. xi, figs. 2 a, b.....                                  | 9-10  |
| <i>O. anomioides</i> , Meek, 1873, pl. xi, figs. 4 a, b.....                                  | 10-11 |
| Subgenus <i>Alectryonia</i> , Fischer.....                                                    | 11    |
| <i>O. (Alectryonia) blackii</i> , White, 1880, pl. xiv, figs. 1 a, b; pl. xvii, fig. 4 a..... | 11-12 |
| <i>Ezogyra</i> , Say.....                                                                     | 12    |
| <i>E. reinchelli</i> , White, 1880, pl. xiii, figs. 1 a-d.....                                | 12    |
| <i>E. forniculata</i> , White, 1880, pl. xiv, figs. 2 a, b.....                               | 13-14 |
| <i>Anomia</i> , Linnæus.....                                                                  | 14    |
| <i>A. propatoria</i> , n. s., White, 1880, pl. xii, figs. 15 a, b.....                        | 14-15 |
| <i>Pteria</i> , Scopoli.....                                                                  | 15    |
| <i>P. ? stabilitatis</i> , n. s., White, 1880, pl. xvii, fig. 3 a.....                        | 15    |
| Subgenus <i>Oxytoma</i> , Meek.....                                                           | 15    |
| <i>P. (Oxytoma) salinensis</i> , White, 1880, pl. xvi, figs. 2 a, b.....                      | 15-16 |
| <i>Gervillia</i> , DeFrance.....                                                              | 16    |
| <i>G. mudgeana</i> , White, 1880, pl. xiv, figs. 3 a, b.....                                  | 16-17 |
| <i>Pinna</i> , Linnæus.....                                                                   | 17    |
| <i>P. lakerii</i> , White, 1879, pl. xi, figs. 1 a, b.....                                    | 17-18 |
| <i>Volsella</i> , Scopoli.....                                                                | 18    |
| Subgenus <i>Brachydontes</i> , Swainson.....                                                  | 18    |
| <i>V. (Brachydontes) multilinigera</i> , Meek, 1873, pl. xi, fig. 3 a.....                    | 18-19 |
| <i>Barbatia</i> , Gray.....                                                                   | 19    |
| <i>B. barbulata</i> , n. s., White, 1880, pl. xi, fig. 5 a.....                               | 19    |
| <i>Cyrena</i> , Lamarck.....                                                                  | 20    |
| <i>C. carletoni</i> , Meek, 1873, pl. xii, figs. 16 a, b.....                                 | 20-21 |
| <i>Pharella</i> , Gray.....                                                                   | 21    |
| <i>P. ? penlei</i> , Meek, 1873, pl. xi, figs. 6 a, b.....                                    | 21-22 |
| <i>Tapes</i> , Mühlfeldt.....                                                                 | 22    |
| <i>T. hilgardii</i> , Shumard, 1860, pl. xvi, figs. 3 a-c.....                                | 22    |
| <i>Pachymya</i> , Sowerby.....                                                                | 22    |
| <i>P. ? compacta</i> , White, 1880, pl. xvii, figs. 4 a, b.....                               | 22-23 |
| <i>Thracia</i> , Leach.....                                                                   | 23    |
| <i>T. myaformis</i> , White, 1880, pl. xvii, figs. 2 a, b.....                                | 23    |
| <i>Gasteropoda.</i>                                                                           |       |
| <i>Melampus</i> , Montfort.....                                                               | 23    |
| <i>M. ? antiquus</i> , Meek, 1873, pl. xii, figs. 11 a-d.....                                 | 23-25 |
| <i>Melampus</i> — ? Meek, 1873, pl. xii, fig. 6 a.....                                        | 25    |
| <i>Neritina</i> , Lamarck.....                                                                | 25    |
| <i>N. bannisteri</i> , Meek, 1873, pl. xii, figs. 10 a-c.....                                 | 25-26 |
| <i>N. pisiformis</i> , Meek, 1873, pl. xii, figs. 9 a-c.....                                  | 26-27 |
| Subgenus <i>Velatella</i> , Meek.....                                                         | 27    |
| <i>N. (Velatella) bellatula</i> , Meek, 1873, pl. xii, figs. 8 a, b.....                      | 27-28 |
| <i>N. (Velatella) carditoides</i> , Meek, 1873, pl. xii, fig. 7 a.....                        | 28-29 |
| <i>Euspira</i> , Agassiz.....                                                                 | 29    |
| <i>E. utahensis</i> , White.....                                                              | 29    |
| <i>Tessarolax</i> , Gabb.....                                                                 | 29    |
| <i>T. hitzi</i> , n. s., White, 1880, pl. xv, fig. 2 a.....                                   | 29-30 |
| <i>Lispedesthes</i> , White.....                                                              | 30    |
| <i>L. ? obscurata</i> , n. s., White, 1880, pl. xi, figs. 7 a, b.....                         | 30-31 |
| <i>Turritella</i> , Lamarck.....                                                              | 31    |
| <i>T. epironema</i> , Meek, 1873, pl. xii, fig. 3 a.....                                      | 31-32 |
| <i>Eulimella</i> , Forbes.....                                                                | 32    |
| <i>E. ? chrysallis</i> , Meek, 1873, pl. xii, fig. 4 a.....                                   | 32-33 |
| <i>E. ? inconspicua</i> , Meek, 1873, pl. xii, fig. 5 a.....                                  | 33    |
| <i>Valeata</i> Müller.....                                                                    | 33    |
| <i>V. nana</i> , Meek, 1873, pl. xii, figs. 17 a, b.....                                      | 33-34 |



|                                                                                               | Page. |
|-----------------------------------------------------------------------------------------------|-------|
| <i>Fusus</i> , Lamarek .....                                                                  | 34    |
| <i>F. ? utahensis</i> , Meek, 1873, pl. xii, fig. 2 a .....                                   | 34    |
| <i>Fuscolaria</i> , Lamarek .....                                                             | 34    |
| Subgenus <i>Piestoecheilus</i> , Meek .....                                                   | 34    |
| <i>F. (Piestoecheilus) allenii</i> , n. s., White, 1880, pl. xii, fig. 1 a .....              | 34-35 |
| <i>Cephalopoda</i> .                                                                          |       |
| <i>Prionocyclus</i> , Meek .....                                                              | 35    |
| <i>P. wyomingensis</i> , Meek, 1876, pl. xv, figs. 1 a-c .....                                | 35-36 |
| <i>Articulata</i> .                                                                           |       |
| <i>Crustacea</i> .                                                                            |       |
| <i>Paramithrax</i> , Milne-Edwards .....                                                      | 37    |
| <i>P. ? walkeri</i> , n. s., 1880, Whitfield, pl. xvi, fig. 1 a, and pl. xvii, fig. 1 a ..... | 37-38 |
| <i>Appendix to Contributions to Invertebrate Paleontology No. 2.</i>                          |       |
| <i>Oidaris hemigranulosus</i> , Shumard, pl. xviii, figs. 2 a, b .....                        | 38    |
| <i>Gervillia gregaria</i> , Shumard, pl. xviii, fig. 3 a .....                                | 38    |
| <i>Nucula bellastrata</i> , Shumard, pl. xviii, figs. 5 a-c .....                             | 38    |
| <i>Nucula haydeni</i> , Shumard, pl. xviii, figs. 6 a, b .....                                | 38    |
| <i>Cardium choctawcense</i> , Shumard, pl. xviii, figs. 7 a-c .....                           | 38    |
| <i>Cytheria lamarensis</i> , Shumard, pl. xviii, figs. 4 a, b .....                           | 39    |
| <i>Ancylloceras annulatum</i> , Shumard, pl. xviii, figs. 10 a, b .....                       | 39    |
| <i>Scaphites vermiculus</i> , Shumard, pl. xviii, fig. 8 a .....                              | 39    |
| <i>Ammonites graysonensis</i> , Shumard, pl. xviii, figs. 9 a, b .....                        | 39    |
| <i>Ammonites swallowii</i> , Shumard, pl. xviii, fig. 1 a .....                               | 39    |

105.

HITE, C. A. Contributions to Invertebrate Paleontology No. 3.—Certain Tertiary Mollusca from Colorado, Utah, and Wyoming. <Twelfth Annual Report of the U. S. Geol. and Geog. Surv. of the Terr. (for the year 1878), pp. 41-48, and pl. xix. Washington, 1883.

ne. Washington, Government Printing Office, 1880. 8vo, pp. 41-48, and pl. xix. Three hundred separates printed. See remarks following entry No. 104.

Ten species are described and figured, one of which is new.

|                                                                             | Page. |
|-----------------------------------------------------------------------------|-------|
| <i>Conchifera</i> .                                                         |       |
| <i>Unio</i> , Retzius .....                                                 | 41    |
| <i>U. shoshonensis</i> , White, 1876, pl. xix, figs. 2 a, b .....           | 41-42 |
| <i>U. washakiensis</i> , Meek, 1871, pl. xix, figs. 3 a, b .....            | 42-43 |
| <i>U. meeki</i> , White, 1877, pl. xix, fig. 1 a .....                      | 43-44 |
| <i>Gasteropoda</i> .                                                        |       |
| <i>Planorbis</i> , Müller .....                                             | 44    |
| <i>P. cirratus</i> , White, 1879, pl. xix, figs. 5 a-c .....                | 44-45 |
| <i>Physa</i> , Draparnaud .....                                             | 45    |
| <i>P. bridgerensis</i> , Meek, 1873, pl. xix, figs. 10 a, b .....           | 45    |
| <i>Succinea</i> , Draparnaud .....                                          | 45    |
| Subgenus <i>Brachyspira</i> , Pfeiffer .....                                | 45    |
| <i>S. (Brachyspira) papillispira</i> , White, 1876, pl. xix, fig. 4 a ..... | 45-46 |
| <i>Pupa</i> , Lamarek .....                                                 | 46    |
| <i>P. arenula</i> , White, 1876, pl. xix, figs. 8 a, b .....                | 46    |
| <i>P. atavuncula</i> , n. s., White, 1880, pl. xix, fig. 9 a .....          | 46-47 |
| Subgenus <i>Leucocheila</i> , Albers .....                                  | 47    |
| <i>P. (Leucocheila) incolata</i> , White, 1876, pl. xix, figs. 7 a-c .....  | 47    |
| <i>Bythinella</i> , Moquin-Tandon .....                                     | 48    |
| <i>B. gregaria</i> , Meek, 1871, pl. xix, figs. 6 a, b .....                | 48    |

106.

HITE, C. A. Contributions to Invertebrate Paleontology No. 4.—Fossils of the Laramie Group. <Twelfth Annual Report of the U. S. Geol. and Geog. Surv. of the Terr. (for the year 1878), pp. 49-103, and pls. xx-xxx. Washington, 1883.

Same. Washington, Government Printing Office, 1880. 8vo, pp. 49-103, and pls. xx-xxx. Three hundred separates printed. See remarks following entry No. 104.

The object of this article is to give a list of all the mollusca that were known from the Laramie Group up to the time of publication, and to illustrate those which had not before been illustrated.

|                                                                                                              | Page.  |
|--------------------------------------------------------------------------------------------------------------|--------|
| <i>Conchifera.</i>                                                                                           |        |
| <i>Ostrea</i> , Linnaeus.....                                                                                | 56     |
| <i>O. glabra</i> , M. & H., 1857.....                                                                        | 56     |
| <i>Anomia</i> , Linnaeus.....                                                                                | 57     |
| <i>A. gryphorhynchus</i> , Meek, 1872, pl. xxv, figs. 1 <i>c-c</i> .....                                     | 57     |
| <i>A. micronema</i> , Meek, 1875, pl. xxv, figs. 2 <i>a-d</i> .....                                          | 57-58  |
| <i>Volzella</i> , Scopoli.....                                                                               | 58     |
| Subgenus <i>Brachydontes</i> , Swainson.....                                                                 | 58     |
| <i>V. (Brachydontes) regularis</i> , White, 1878, pl. xxv, fig. 3 <i>a</i> .....                             | 58-59  |
| <i>V. (Brachydontes) laticostata</i> , White, 1878, pl. xxv, fig. 4 <i>a</i> .....                           | 59     |
| <i>Azinea</i> , Poli.....                                                                                    | 59     |
| <i>A. holmesiana</i> , n. s., White, 1880, pl. xx, figs. 2 <i>a, b</i> .....                                 | 59-60  |
| <i>Nuculana</i> , Link.....                                                                                  | 60     |
| <i>N. inclara</i> , White, 1878, pl. xxv, fig. 7 <i>a</i> .....                                              | 60, 61 |
| <i>Anodonta</i> , Cuvier.....                                                                                | 61     |
| <i>A. propatoris</i> , White, 1877, pl. xxiv, figs. 2 <i>a-d</i> .....                                       | 61-62  |
| <i>A. parallela</i> , White, 1878, pl. xxiv, fig. 3 <i>a</i> .....                                           | 62     |
| <i>Unio</i> , Retzius.....                                                                                   | 62     |
| <i>U. aldrichi</i> , White, 1878, pl. xxix, figs. 2 <i>a, b</i> .....                                        | 62-63  |
| <i>U. goniambonatus</i> , White, 1878, pl. xxix, figs. 1 <i>a, b</i> .....                                   | 63-64  |
| <i>U. brachyopisthus</i> , White, 1876, pl. xxii, figs. 2 <i>a, b</i> .....                                  | 64     |
| <i>U. couesi</i> , White, 1877, pl. xxvii, fig. 1 <i>a</i> .....                                             | 64, 65 |
| <i>U. propheticus</i> , White, 1876, pl. xxii, fig. 5 <i>a</i> .....                                         | 65     |
| <i>U. proavitus</i> , White, 1877, pl. xxii, figs. 3 <i>a-d</i> .....                                        | 65-66  |
| <i>U. endlichii</i> , White, 1877, pl. xxvi, figs. 1 <i>a, b</i> .....                                       | 66-67  |
| <i>U. holmesianus</i> , White, 1877, pl. xxii, figs. 4 <i>a-c</i> .....                                      | 67-68  |
| <i>U. danar</i> , M. & H. ? pl. xxvii, figs. 2 <i>a, b</i> .....                                             | 68     |
| <i>U. cryptorhynchus</i> , White, 1877, pl. xxiv, figs. 1 <i>a, b</i> .....                                  | 68-69  |
| <i>U. senectus</i> , White, 1877, pl. xxviii, figs. 1 <i>a-c</i> .....                                       | 69     |
| <i>U. primævus</i> , White, 1877, pl. xxix, figs. 3 <i>a, b</i> .....                                        | 70     |
| <i>U. priscus</i> , M. & H.....                                                                              | 70     |
| <i>U. subspatulatus</i> , M. & H.....                                                                        | 71     |
| <i>U. deweyanus</i> , M. & H.....                                                                            | 71     |
| <i>U. vetustus</i> , Meek.....                                                                               | 71     |
| <i>U. belliplicatus</i> , Meek.....                                                                          | 71     |
| <i>U. gonionotus</i> , White, 1876, pl. xxvi, figs. 2 <i>a-e</i> .....                                       | 71-72  |
| <i>Sphærium</i> , Scopoli.....                                                                               | 72     |
| <i>S. planum</i> , M. & H.....                                                                               | 72     |
| <i>S. recticardinale</i> , M. & H.....                                                                       | 72     |
| <i>S. formosum</i> , M. & H.....                                                                             | 72     |
| <i>S. subellipticum</i> , M. & H.....                                                                        | 72     |
| <i>Corbicula</i> , Megerle.....                                                                              | 72     |
| <i>C. obesa</i> , White, 1878, pl. xxiii, figs. 3 <i>a-e</i> .....                                           | 72-73  |
| <i>C. cardiniiformis</i> , White, 1878, pl. xxv, figs. 5 <i>a, b</i> .....                                   | 73     |
| <i>C. cleburni</i> , White, 1878, pl. xxiii, figs. 1 <i>a-c</i> .....                                        | 73-74  |
| <i>C. cytheriformis</i> , M. & H., pl. xxi, figs. 4 <i>a-d</i> .....                                         | 74     |
| <i>C. nebrascensis</i> , M. & H.....                                                                         | 74     |
| <i>C. occidentalis</i> , M. & H., 1856, pl. xxi, figs. 3 <i>a-e</i> .....                                    | 75     |
| Subgenus <i>Leptesthes</i> , Meek.....                                                                       | 75     |
| <i>C. (Leptesthes) fracta</i> , Meek, 1871, pl. xxiii, figs. 2 <i>a-e</i> and pl. xxi, fig. 5 <i>a</i> ..... | 75-77  |
| <i>C. (Leptesthes) planumbona</i> , Meek, 1875, pl. xxi, figs. 2 <i>a-d</i> .....                            | 77-78  |
| <i>C. (Leptesthes) macrospistha</i> , White, 1878, pl. xxiii, figs. 4 <i>a-f</i> .....                       | 78-79  |
| <i>C. (Leptesthes) subelliptica</i> , M. & H.....                                                            | 79     |
| Subgenus <i>Veloritina</i> , Meek.....                                                                       | 79     |
| <i>C. (Veloritina) durkei</i> , Meek.....                                                                    | 79-80  |
| <i>Corbula</i> , Bruguière.....                                                                              | 80     |
| <i>C. subtrigonalis</i> , M. & H.....                                                                        | 80     |
| <i>C. perundata</i> , M. & H.....                                                                            | 80     |
| <i>C. crassatelliformis</i> , Meek.....                                                                      | 80     |
| <i>C. tropidophora</i> , Meek.....                                                                           | 80     |



|                                                                                | Page. |
|--------------------------------------------------------------------------------|-------|
| <i>C. naefiformis</i> , M. & H.                                                | 80    |
| <i>C. undifera</i> , Meek, 1873, pl. xxx, figs. 4 a-f                          | 80-81 |
| <i>C. undifera</i> var. <i>subundifera</i> , White, 1880, pl. xxx, figs. 5 a-c | 81-82 |
| <i>C. pyriformis</i> , Meek                                                    | 82    |
| <i>Gasteropoda</i> .                                                           |       |
| <i>Rhytophorus</i> , Meek                                                      | 82    |
| <i>R. priacus</i> , Meek                                                       | 82    |
| <i>R. meekii</i> , n. s., White, 1880, pl. xxx, figs. 8 a, b                   | 82-83 |
| <i>Aeroloxus</i> , Beck                                                        | 83    |
| <i>A. minutus</i> , M. & H.                                                    | 83    |
| <i>Planorbis</i> , Müller                                                      | 83    |
| <i>P. convolutus</i> , M. & H.                                                 | 83    |
| Subgenus <i>Bathyomphalus</i> , Agassiz                                        | 83    |
| <i>P. (Bathyomphalus) amplexus</i> , M. & H.                                   | 83    |
| <i>P. (Bathyomphalus) planoconvexus</i> , M. & H.                              | 83    |
| <i>Limnæa</i> , Lamarck                                                        | 84    |
| <i>L. nitidula</i> , Meek                                                      | 84    |
| Subgenus <i>Pleurolimnæa</i> , Meek                                            | 84    |
| <i>L. (Pleurolimnæa) tenuicostata</i> , M. & H.                                | 84    |
| <i>Acella</i> , Haldeman                                                       | 84    |
| <i>A. haldemani</i> , White, 1878, pl. xxx, figs. 9 a, b                       | 84    |
| <i>Physa</i> , Draparnaud                                                      | 84    |
| <i>P. felix</i> , White, 1878, pl. xxii, fig. 1 a                              | 84-85 |
| <i>P. copei</i> , White, 1877, pl. xxiv, figs. 4 a, b                          | 85    |
| <i>Physa</i> ——— ? White, 1880, pl. xxx, fig. 11 a                             | 85    |
| <i>Bulinus</i> , Adanson                                                       | 86    |
| <i>B. atavus</i> , White, 1877, pl. xxiv, figs. 5 a, b                         | 86    |
| <i>B. disjunctus</i> , White, 1879, pl. xxiv, figs. 6 a, b                     | 86-87 |
| <i>B. longiusculus</i> , M. & H.                                               | 87    |
| <i>B. ? rhomboideus</i> , M. & H.                                              | 87    |
| <i>B. subelongatus</i> , M. & H.                                               | 87    |
| <i>Vitrina</i> , Draparnaud                                                    | 87    |
| <i>V. ? obliqua</i> , M. & H.                                                  | 87    |
| <i>Hyalina</i> , Férussac                                                      | 87    |
| <i>H. ? occidentalis</i> , M. & H.                                             | 87    |
| <i>H. ? evansi</i> , M. & H.                                                   | 87-88 |
| <i>Helix</i> , Linnaeus                                                        | 88    |
| <i>H. vetusta</i> , M. & H.                                                    | 88    |
| <i>Thaumatostus</i> , Albers                                                   | 88    |
| <i>T. limnaeiformis</i> , M. & H.                                              | 88    |
| <i>Columna</i> , Perry                                                         | 88    |
| <i>C. teres</i> , M. & H.                                                      | 88    |
| <i>C. vermicula</i> , M. & H.                                                  | 88    |
| <i>Neritina</i> , Lamarck                                                      | 88    |
| <i>N. volutellina</i> , White, 1876, pl. xxi, figs. 6 a, b                     | 88-89 |
| <i>N. naticiformis</i> , White, 1878, pl. xxx, figs. 3 a, b                    | 89    |
| Subgenus <i>Velatella</i> , Meek                                               | 89    |
| <i>N. (Velatella) baptista</i> , White, 1878, pl. xxix, figs. 6 a, b           | 89-90 |
| <i>Cerithidea</i> , Swainson                                                   | 90    |
| Subgenus <i>Pirenella</i> , Gray                                               | 90    |
| <i>C. (Pirenella) nebrascensis</i> , M. & H.                                   | 90    |
| <i>Goniobasis</i> , Lea                                                        | 90    |
| <i>G. cleburni</i> , White, 1876, pl. xxx, figs. 4 a-d                         | 91    |
| <i>G. chrysallidis</i> , Meek, 1871, pl. xxx, figs. 6 a, b                     | 91-92 |
| <i>G. chrysalloidea</i> , White, 1876, pl. xxx, figs. 5 a, b                   | 92    |
| <i>G. endlichii</i> , White, 1878, pl. xxx, figs. 7 a-c                        | 92-93 |
| <i>G. macilenta</i> , White, 1879, pl. xxx, fig. 10 a                          | 93    |
| <i>G. gracilenta</i> , M. & H.                                                 | 94    |
| <i>G. conveza</i> , M. & H.                                                    | 94    |
| <i>G. invenusta</i> , M. & H.                                                  | 94    |
| <i>G. sublaevis</i> , M. & H.                                                  | 94    |
| <i>G. ? omitta</i> , M. & H.                                                   | 94    |
| <i>G. ? subtoruosa</i> , M. & H.                                               | 94    |
| <i>G. nebrascensis</i> , M. & H.                                               | 94    |

|                                                                      | Page.   |
|----------------------------------------------------------------------|---------|
| <i>G. tenuicarinata</i> , M. & H. ....                               | 94      |
| <i>Melania</i> , Lamarck .....                                       | 94      |
| <i>M. ? insculpta</i> , Meek, 1873, pl. xx, fig. 4 a .....           | 94-95   |
| <i>M. wyomingensis</i> , Meek, 1873, pl. xxviii, figs. 6 a, b .....  | 95-96   |
| <i>Pyrgulifera</i> , Meek .....                                      | 96      |
| <i>P. humerosa</i> , Meek .....                                      | 96      |
| <i>Cassiopella</i> , White .....                                     | 96-97   |
| <i>C. turricula</i> , White, 1876, pl. xxvii, figs. 3 a-g .....      | 97      |
| <i>Hydrobia</i> , Hartmann .....                                     | 97      |
| <i>H. anthonyi</i> , M. & H. ....                                    | 97      |
| <i>H. warrenana</i> , M. & H. ....                                   | 97      |
| <i>H. subconica</i> , M. & H. ....                                   | 97      |
| <i>H. ? eulinoides</i> , M. & H. ....                                | 97      |
| <i>Micropyrgus</i> , Meek .....                                      | 98      |
| <i>M. minutulus</i> , M. & H. ....                                   | 98      |
| <i>Viviparus</i> , Montfort .....                                    | 98      |
| <i>V. plicapressus</i> , White, 1876, pl. xxviii, figs. 3 a, b ..... | 98      |
| <i>V. prudentius</i> , White, 1878, pl. xxviii, figs. 5 a, b .....   | 98-99   |
| <i>V. couesi</i> , White, 1878, pl. xxx, fig. 1 a .....              | 99      |
| <i>V. leai</i> , M. & H. ....                                        | 100     |
| <i>V. retusus</i> , M. & H. ....                                     | 100     |
| <i>V. peculiaris</i> , M. & H. ....                                  | 100     |
| <i>V. trochiformis</i> , M. & H. ....                                | 100     |
| <i>V. reynoldsianus</i> , M. & H. ....                               | 100     |
| <i>V. leidyi</i> , M. & H. ....                                      | 100     |
| <i>V. conradi</i> , M. & H. ....                                     | 100     |
| <i>Tulotoma</i> , Haldeman .....                                     | 100     |
| <i>T. thompsoni</i> , White, 1876, pl. xxviii, figs. 2 a-h .....     | 100-101 |
| <i>Campeloma</i> , Rafinesque .....                                  | 101     |
| <i>C. vetula</i> , M. & H. ....                                      | 101     |
| <i>C. multistriata</i> , M. & H. ....                                | 101     |
| <i>C. multilincata</i> , M. & H. ....                                | 101     |
| <i>C. maerospira</i> , Meek, pl. xxx, fig. 2 a .....                 | 102     |
| <i>Valcata</i> , Müller .....                                        | 102     |
| <i>V. subumbilicata</i> , M. & H. ....                               | 102     |
| <i>V. parvula</i> , M. & H. ....                                     | 102     |
| <i>V. ? montanaensis</i> , Meek .....                                | 102     |
| <i>Odontobasis</i> , Meek .....                                      | 102     |
| <i>O. buccinoides</i> , White, 1876, pl. xx, figs. 3 a, b .....      | 102-103 |
| <i>O. ? formosa</i> , White, 1878, pl. xxviii, fig. 7 a .....        | 103     |

## 107.

WHITE, C. A. Contributions to Invertebrate Paleontology, No. 5. Triassic Fossils of Southeastern Idaho. <Twelfth Annual Report U. S. Geol. and Geog. Surv. of the Terr. (for the year 1878), pp. 105-118, pls. xxxi-xxxii. Washington, 1883. Same. Washington: Government Printing Office, 1880, 8vo, pp. 105-118, pls. xxxi-xxxii. Three hundred separates printed. See remarks following entry No. 93.

This article is essentially a republication of Paleontological paper No. 9. (See entry No. 71.)

|                                                                     | Page.   |
|---------------------------------------------------------------------|---------|
| <i>Brachiopoda.</i>                                                 |         |
| <i>Terebratulina</i> , Lihwyd .....                                 | 108     |
| <i>T. semisimplex</i> , White, 1879, pl. xxxi, figs. 3 a-c .....    | 108-109 |
| <i>T. augusta</i> , H. & Whitf. ? .....                             | 109     |
| <i>Conchifera.</i>                                                  |         |
| <i>Aviculopecten</i> , McCoy .....                                  | 109     |
| <i>A. ? pealei</i> , White, 1879, pl. xxxii, fig. 4 a .....         | 109-110 |
| <i>A. ? altus</i> , White, 1879, pl. xxxii, fig. 3 a .....          | 110     |
| <i>A. ? idahoensis</i> , Meek, 1872, pl. xxxii, fig. 2 a .....      | 110-111 |
| <i>Cephalopoda.</i>                                                 |         |
| <i>Meekoceras</i> , Hyatt .....                                     | 112     |
| <i>M. aplan[atum]</i> , White, 1879, pl. xxxi, figs. 1 a-d .....    | 112-113 |
| <i>M. mushbachianum</i> , White, 1879, pl. xxxii, figs. 1 a-d ..... | 114     |



|                                                                   | Page.   |
|-------------------------------------------------------------------|---------|
| <i>M. gracilitatis</i> , White, 1879, pl. xxxi, figs. 2 a-d ..... | 115-116 |
| <i>M. gracilitatis</i> var., White, 1880.....                     | 116     |
| <i>Arcestes</i> , Suess .....                                     | 116     |
| <i>A. ? cirratus</i> , White, 1879 .....                          | 116-117 |
| <i>Arcestes</i> ——— ? White ? 1880.....                           | 117-118 |

108.

WHITE, C. A. Contributions to Invertebrate Paleontology, No. 6.—Certain Carboniferous Fossils from the Western States and Territories. <Twelfth Annual Report U. S. Geol. and Geog. Surv. of the Terr. (for the year 1878), pp. 119-141, and pls. xxxiii-xxxvi. Washington, 1883.

ame. Washington: Government Printing Office, 1883. 8vo, pp. 119-141, and pls. xxxiii-xxxvi. Three hundred separates printed. See remarks following entry No. 104.

Twenty-seven species of fossils are described and illustrated, all of which had been previously published.

|                                                                                              | Page.   |
|----------------------------------------------------------------------------------------------|---------|
| <i>Actinozoa.</i>                                                                            |         |
| <i>Amplexus</i> , Sowerby .....                                                              | 120     |
| <i>A. zaphrentiformis</i> , White, 1876, pl. xxxiii, figs. 1 a-d .....                       | 120     |
| <i>Acervularia</i> , Schweigger .....                                                        | 120     |
| <i>A. adjunctiva</i> , White, 1880, pl. xxxv, figs. 1 a-d.....                               | 120-121 |
| <i>Leptopora</i> , Winchell .....                                                            | 121     |
| <i>L. winchelli</i> , White, 1879, pl. xxxiv, fig. 11 a .....                                | 121-122 |
| <i>Echinodermata.</i>                                                                        |         |
| <i>Platycrinus</i> , Miller.....                                                             | 122     |
| <i>P. haydeni</i> , Meek, 1873, pl. xxxiii, fig. 7 a.....                                    | 122-123 |
| <i>Leptythocrinus</i> , White.....                                                           | 123     |
| <i>L. olliculiformis</i> , White, 1880, pl. xxxv, figs. 2 a, b.....                          | 124     |
| <i>Eupachycrinus</i> , M. & W.....                                                           | 124     |
| <i>E. platybasis</i> , White, 1876, pl. xxxiii, fig. 8 a .....                               | 124-125 |
| <i>Cyathocrinus</i> , Miller .....                                                           | 125     |
| <i>C. stillatus</i> , White, 1880, pl. xxxv, figs. 3 a, b .....                              | 125     |
| <i>Eriocrinus</i> , M. & W .....                                                             | 126     |
| <i>E. typus</i> , M. & W., 1866, pl. xxxiii, fig. 5 a .....                                  | 126-127 |
| <i>E. (Ceriocrinus) planus</i> , White, 1880, pl. xxxv, figs. 5 a, b .....                   | 127-128 |
| <i>E. (Ceriocrinus) inflexus</i> , Geinitz, 1866, pl. xxxiv, figs. 9 a, b .....              | 128     |
| <i>Poteriocrinus</i> , Miller .....                                                          | 128     |
| <i>P. montanaensis</i> , Meek, 1873, pl. xxxiii, fig. 6 a .....                              | 128-129 |
| <i>Rhodocrinus</i> , Miller .....                                                            | 129     |
| <i>R. vesperalis</i> , White, 1880, pl. xxxv, figs. 4 a, b .....                             | 129-130 |
| <i>Archæocidaris</i> , McCoy .....                                                           | 130     |
| <i>A. cratis</i> , White, 1876, pl. xxxiii, fig. 2 a .....                                   | 130     |
| <i>A. dininnii</i> , White, 1880, pl. xxxv, figs. 6 a-c .....                                | 131     |
| <i>Polyzoa.</i>                                                                              |         |
| <i>Ptilodictya</i> , Lonsdale .....                                                          | 131     |
| <i>P. triangulata</i> , White, 1878, pl. xxxiii, figs. 3 a-e.....                            | 131-132 |
| <i>Brachiopoda.</i>                                                                          |         |
| <i>Productus</i> , Sowerby.....                                                              | 132     |
| <i>P. giganteus</i> , Martin, pl. xxxvi, figs. 1 a-c .....                                   | 132     |
| <i>Rhynchonella</i> , Fischer.....                                                           | 133     |
| <i>R. endlichi</i> , Meek, 1875, pl. xxxiii, figs. 4 a, b, and pl. xxxvi, figs. 2 a, b ..... | 133-134 |
| <i>Retzia</i> , King.....                                                                    | 134     |
| <i>R. woosteri</i> , White, 1879, pl. xxxiv, figs. 8 a, b .....                              | 134     |
| <i>Spirifer</i> , Sowerby.....                                                               | 135     |
| <i>S. agelatus</i> , Meek, 1873, pl. xxxiv, figs. 10 a, b .....                              | 135     |
| <i>Conchifera.</i>                                                                           |         |
| <i>Nucula</i> , Lamarck.....                                                                 | 136     |
| <i>N. perumbonata</i> , White, 1879, pl. xxxiv, figs. 7 a, b .....                           | 136     |
| <i>Nuculana</i> , Link .....                                                                 | 136     |
| <i>N. obesa</i> , White, 1879, pl. xxxiv, figs. 2 a-c.....                                   | 136-137 |
| <i>Allorisma</i> , King.....                                                                 | 137     |
| <i>A. ? gilberti</i> , White, 1879, pl. xxxiii, figs. 9 a, b .....                           | 137-138 |

## Gasteropoda.

|                                                                             | Page.   |
|-----------------------------------------------------------------------------|---------|
| <i>Bellerophon</i> , Montfort.....                                          | 138     |
| <i>B. subpapillosus</i> , White, 1879, pl. xxxiv, fig. 3 a.....             | 138     |
| <i>Naticopsis</i> , McCoy.....                                              | 139     |
| <i>N. remex</i> , White, 1876, pl. xxxiv, fig. 6 a.....                     | 139     |
| <i>Murchisonia</i> , d'Archiac.....                                         | 139     |
| <i>M. terebra</i> , White, 1879, pl. xxxiv, fig. 4 a.....                   | 139-140 |
| <i>Pleurotomaria</i> , DeFrance.....                                        | 140     |
| <i>P. taggerti</i> , Meek, 1874, pl. xxxiv, figs. 1 a, b.....               | 140     |
| <i>P. grayvillensis</i> , Norwood & Pratten, 1855, pl. xxxiv, fig. 5 a..... | 140-141 |

## 109.

WHITE, C. A. Contributions to Invertebrate Paleontology No. 7. Jurassic Fossils from the Western Territories. <Twelfth Annual Report of the U. S. Geol. and Geog. Surv. of the Terr. (for the year 1878), pp. 143-153, pls. xxxvii-xxxviii. Washington, 1883.

Same. Washington: Government Printing Office, 1880. 8vo, pp. 143-153, and plates xxxvii-xxxviii. Three hundred separates printed. See remarks following entry No. 93.

Sixteen species are described and figured, part of which are new, and the genus *Lyosoma* is diagnosed.

|                                                                                     | Page.   |
|-------------------------------------------------------------------------------------|---------|
| <i>Camptoneetes</i> (Agassiz), Meek.....                                            | 143     |
| <i>C. plateisformis</i> , White, 1876, pl. xxxvii, fig. 5 a.....                    | 143-144 |
| <i>Aviculopecten</i> , McCoy.....                                                   | 144     |
| <i>A. superstrictus</i> , n. s., White, 1880, pl. xxxvii, figs. 4 a, b.....         | 144     |
| <i>Gervillia</i> , DeFrance.....                                                    | 145     |
| <i>G. montanaensis</i> , Meek, 1873, pl. xxxvii, figs. 1 a, b.....                  | 145     |
| <i>Volzella</i> , Scopoli.....                                                      | 145     |
| <i>V. subimbricata</i> , Meek, 1873, pl. xxxvii, figs. 2 a-c.....                   | 145-146 |
| <i>V. (Modiolina) platynota</i> , n. s., White, 1880, pl. xxxvii, figs. 3 a, b..... | 146-147 |
| <i>Mytilus</i> , Linnaeus.....                                                      | 147     |
| <i>M. whitlei</i> , Whitfield, 1877, pl. xxxvii, fig. 9 a.....                      | 147     |
| <i>Trigonia</i> , Bruguière.....                                                    | 147     |
| <i>T. montanaensis</i> , Meek, 1873, pl. xxxviii, fig. 2 a.....                     | 147-148 |
| <i>T. americana</i> , Meek, 1873, pl. xxxviii, figs. 1 a, b.....                    | 148     |
| <i>Astarte</i> , Sowerby.....                                                       | 149     |
| <i>A. packardii</i> , n. s., White, 1880, pl. xxxvii, figs. 6 a, b.....             | 149     |
| <i>Cardinia</i> , Agassiz.....                                                      | 149     |
| <i>C. praeclara</i> , n. s., White, 1880, pl. xxxvii, figs. 7 a, b.....             | 149-150 |
| <i>Tancredia</i> , Lycett.....                                                      | 150     |
| <i>T. extensa</i> , White, 1880, pl. xxxviii, fig. 4 a.....                         | 150     |
| <i>Pholadomya</i> , Sowerby.....                                                    | 150     |
| <i>P. kingii</i> , Meek, 1873, pl. xxxviii, figs. 3 a, b.....                       | 150-151 |
| <i>Gontomya</i> , Agassiz.....                                                      | 151     |
| <i>G. montanaensis</i> , Meek, 1873, pl. xxxvii, fig. 8 a.....                      | 151     |
| <i>Myacites</i> (Schlotheim), Munster.....                                          | 151     |
| <i>M. subcompressus</i> , Meek, 1873, pl. xxxviii, figs. 5 a-c.....                 | 151-152 |
| * <i>Lyosoma</i> , n. g., White, 1880.....                                          | 152-153 |
| <i>L. powelli</i> , White, 1876, pl. xxxviii, figs. 6 a-d.....                      | 153     |

## 110.

WHITE, C. A. Contributions to Invertebrate Paleontology No. 8. Fossils from the Carboniferous Rocks of the Interior States. <Twelfth Annual Report of the U. S. Geol. and Geog. Surv. of the Terr. (for the year 1878). pp. 155-171, pls. xxxix-xlii. Washington, 1883.

Same. Washington: Government Printing Office, 1880. 8vo, pp. 155-171, and plates xxxix-xlii. Three hundred separates printed. See remarks following entry No. 93. The series of contributions closes with No. 8, and it is not again resumed in that form.

Twenty-eight species are described and figured, part of which are new.

\* *Avic*, to loosen, and *ovata*, the body.



|                                                                          | Page.   |
|--------------------------------------------------------------------------|---------|
| <i>Radiata.</i>                                                          |         |
| <i>Actinaria.</i>                                                        |         |
| <i>Zaphrentis</i> , Rafinesque.....                                      | 155     |
| <i>Z. elliptica</i> , White, 1862, pl. xxxix, figs. 4 a, b.....          | 155-156 |
| <i>Z. calceola</i> , White & Whitf., 1862, pl. xxxix, figs. 6 a-d.....   | 156     |
| <i>Hadrophyltum</i> , Edwards & Haine.....                               | 156     |
| <i>H. glans</i> , White, 1862, pl. xxxix, figs. 5 a, b.....              | 156-157 |
| <i>Lophophyllum</i> , Edwards & Haine.....                               | 157     |
| <i>L. expansum</i> , White, 1876, pl. xxxix, figs. 4 a, b.....           | 157     |
| <i>Chonophyllum</i> , Edwards & Haine.....                               | 157     |
| <i>C. sedaliense</i> , n. s., White, 1880, pl. xxxix, fig. 1 a.....      | 157     |
| <i>Michilinia</i> , De Koninck.....                                      | 157     |
| <i>M. f. placenta</i> , n. s., White, 1880, pl. xxxix, figs. 1 a-d.....  | 157-158 |
| <i>M. expansa</i> , n. s., White, 1880, pl. xxxix, figs. 2 a, b.....     | 158     |
| <i>Lithostrotion</i> , Fleming.....                                      | 159     |
| <i>L. microstylum</i> , n. s., White, 1880, pl. xl, fig. 7 a.....        | 159     |
| <i>L. mamillare</i> , Castelnau, pl. xl, figs. 6 a, b.....               | 159-160 |
| <i>Echinodermata.</i>                                                    |         |
| <i>Platycrinus</i> , Miller.....                                         | 160     |
| <i>P. bonoensis</i> , White, 1878, pl. xl, fig. 5 a.....                 | 160-161 |
| <i>Scaphiocrinus</i> , Hall.....                                         | 161     |
| <i>S. gibsoni</i> , White, 1878, pl. xl, fig. 4 a.....                   | 161-162 |
| <i>S. gurleyi</i> , White, 1878, pl. xl, fig. 3 a.....                   | 162     |
| <i>Actinocrinus</i> , Miller.....                                        | 162     |
| <i>A. wachsmuthi</i> , n. s., White, 1880, pl. xl, figs. 1 a, b.....     | 162-163 |
| <i>Lepidesthes</i> , M. & W.....                                         | 163     |
| <i>L. colleti</i> , White, 1878, pl. xl, figs. 2 a, b.....               | 163-164 |
| <i>Mollusca.</i>                                                         |         |
| <i>Molluscoidea.</i>                                                     |         |
| <i>Brachiopoda.</i>                                                      |         |
| <i>Orthis</i> , Dalman.....                                              | 164     |
| <i>O. thiemei</i> , White, 1860, pl. xli, figs. 4 a-d.....               | 164-165 |
| <i>Rhynchonella</i> , Fischer.....                                       | 165     |
| <i>R. ottumwa</i> , White, 1862, pl. xli, figs. 5 a-c.....               | 165     |
| <i>Spirifer</i> , Sowerby.....                                           | 165     |
| <i>S. subcardiiformis</i> , Hall, 1858, pl. xli, figs. 2 a-c.....        | 165-166 |
| <i>Mollusca, vera.</i>                                                   |         |
| <i>Conchifera.</i>                                                       |         |
| <i>Anthracopectera</i> , Salter.....                                     | 166     |
| <i>A. polita</i> , n. s., White, 1880, pl. xlii, figs. 5 a, b.....       | 166     |
| <i>Astartella</i> , Hall.....                                            | 166     |
| <i>A. gurleyi</i> , White, 1878, pl. xlii, figs. 6 a, b.....             | 166-167 |
| <i>Allorisma</i> , King.....                                             | 167     |
| <i>A. marionensis</i> , White, 1876, pl. xlii, figs. 1 a, b.....         | 167-168 |
| <i>Gasteropoda.</i>                                                      |         |
| <i>Euomphalus</i> , Sowerby.....                                         | 167     |
| <i>E. springvalensis</i> , White, 1876, pl. xli, figs. 1 a, b.....       | 167-168 |
| <i>Platyceras</i> , Conrad.....                                          | 168     |
| <i>P. tribulosum</i> , n. s., White, 1880, pl. xli, figs. 6 a, b.....    | 168     |
| <i>Naticopsis</i> , McCoy.....                                           | 168     |
| <i>N. monilifera</i> , n. s., White, 1880, pl. xlii, figs. 3 a-c.....    | 168     |
| <i>Pleurotomaria</i> , DeFrance.....                                     | 169     |
| <i>P. broadheadi</i> , n. s., White, 1880, pl. xlii, figs. 1 a, b.....   | 169     |
| <i>P. newportensis</i> , n. s., White, 1880, pl. xlii, figs. 2 a, b..... | 169     |
| <i>Pteropoda.</i>                                                        |         |
| <i>Conularia</i> , Miller.....                                           | 170     |
| <i>C. crustula</i> , n. s., White, 1880, pl. xlii, fig. 4 a.....         | 170     |
| <i>Cephalopoda.</i>                                                      |         |
| <i>Nautilus</i> , Breynius.....                                          | 170     |
| <i>N. danvillensis</i> , White, 1878, pl. xlii, fig. 7 a.....            | 170-171 |
| <i>Articulata.</i>                                                       |         |
| <i>Vermes.</i>                                                           |         |
| <i>Serpula</i> , Linnæus.....                                            | 171     |
| <i>S. insita</i> , White, 1878, pl. xlii, fig. 8 a.....                  | 171     |

## 111.

WHITE, C. A. Forestry in the Great Prairie Region. <American Journal of Forestry, vol. 7 (May No.), pp. 366-370. Cincinnati, 1883.

Same. Cincinnati, 1883. 8vo, pp. 1-6. Forty separates printed without title-page, or covers, but repaged.

This Journal was started at the beginning of 1883, with Dr. F. B. Hough as editor and Robert Clarke & Co. as publishers. It was published one year and then discontinued.

## 112.

WHITE, C. A. The reversion of Sunflowers at night. <Nature. 4to, vol. [xxvii?] p. 241. London and New York, 1883.

Sunflowers are observed to turn to the eastward immediately after dark.

## 113.

WHITE, C. A. New Molluscan forms from the Laramie and Green River groups; with discussion of some associated forms heretofore known. <Proc. U. S. National Museum, vol. v, pp. 94-99, pls. i-ii. Washington, 1883.

Same. Washington: Government Printing Office, 1882. 8vo, pp. 94-99, and two plates. One hundred and fifty separates printed, together with the paper of the next entry, without title-page, covers, or repaging.

Six species are described and figured as new; and *Paramelania*, Smith, is figured and compared with *Pyrgulifera*, Meek. Also the discovery of the under valve of *Anomia micronema* is announced and figured; and the prismatic structure of that valve suggested as the cause that it has so generally been destroyed.

|                                                                          | Page. |
|--------------------------------------------------------------------------|-------|
| <i>Unio</i> , Retzius .....                                              | 94    |
| <i>U. clinopisthus</i> , n. s., White, 1882, pl. iii, figs. 1 and 2..... | 94    |
| <i>Corbicula</i> , Mühlfeldt .....                                       | 94    |
| <i>C. berthoudi</i> , n. s., White, 1882, pl. iv, figs. 1-3 .....        | 94-95 |
| <i>C. augheyi</i> , n. s., White, 1882, pl. iv, figs. 4-6.....           | 95    |
| <i>Neritina</i> , Lamarck .....                                          | 95    |
| <i>N. bruneri</i> , n. s., White, 1882, pl. iv, figs. 7 and 8 .....      | 95-96 |
| <i>Melanopsis</i> , Lamarck .....                                        | 96    |
| <i>M. americana</i> , n. s., White, 1882, pl. iv, figs. 9 and 10 .....   | 96    |
| <i>Campeloma</i> , Rafinesque .....                                      | 97    |
| <i>C. producta</i> , n. s., White, 1882, pl. iii, figs. 7-9.....         | 97    |

## 114.

WHITE, C. A. The Molluscan Fauna of the Truckee Group, including a new form. <Proc. U. S. National Museum, vol. v, pp. 99-101, pl. i. Washington, 1883.

Same. Washington: Government Printing Office, 1882. 8vo, pp. 99-101, and one plate. One hundred and fifty separates printed, together with the paper of the last entry, without title-page, covers, or repaging.

Nine species are figured, which constitute the entire molluscan fauna of the Truckee Group as it was then known to the author. A species of *Latia* is described, which is the only one of that genus yet known in North America.

|                                                                                         | Page.   |
|-----------------------------------------------------------------------------------------|---------|
| <i>Melania sculptilis</i> , Meek, pl. v, fig. 1 .....                                   | 100     |
| <i>Melania subsculptilis</i> , Meek, pl. v, fig. 2.....                                 | 100     |
| <i>Melania taylori</i> , Gabb, pl. v, fig. 3 .....                                      | 100     |
| <i>Lithasia antiqua</i> , Gabb, pl. v, fig. 4 .....                                     | 100     |
| <i>Carinifex</i> ( <i>Vorticifex</i> ) <i>tryoni</i> , Meek, pl. v, figs. 5-7 .....     | 100     |
| <i>Carinifex</i> ( <i>Vorticifex</i> ) <i>binneyi</i> , Meek, pl. v, figs. 8 and 9..... | 100     |
| <i>Ancylus undulatus</i> , Meek, pl. v, figs. 10 and 11.....                            | 100     |
| <i>Sphaerium rugosum</i> , Meek, pl. v, figs. 14-16 .....                               | 100     |
| <i>Sphaerium</i> ? <i>idahoense</i> , Meek, pl. v, figs. 12 and 13.....                 | 100     |
| <i>Latia dallii</i> , n. s., White, 1882, pl. v, figs. 17-20 .....                      | 100-101 |



HITE, C. A. A Review of the Non-Marine Fossil Mollusca of North America. <Third Annual Report of the Director of the United States Geological Survey to the Secretary of the Interior, 1881-'82. By J. W. Powell, Director, pp. 403-550 and pls. p. i-xxxii. Washington, 1883.

me. Washington: Government Printing Office, 1883. Imp. 8vo, pp. 1-80 and pls. 1-32. One hundred copies printed early in 1883 with paging, numbering of the plates, and title-page separate from that of the volume.

me. One hundred more copies printed at the time of the issuance of the volume in 1884.

This memoir contains a discussion of the families which are represented in the brackish and fresh water deposits, an annotated catalogue of all the known species in the order in which the formations occur, general discussion of the conditions which prevailed when the mollusks lived, and the manner in which the lines of descent of a part of them have been continued to the present time. Two hundred and twenty-seven species are noticed, all of which are illustrated. Although the volume of which this work is an extract, bears the date 1883 upon its title-page, the volume, as a whole, was not issued until near the middle of 1884.

[The pagination in the separates is different from that in the volume. Both are referred to.]

| DEVONIAN.                                                             | Page.   |
|-----------------------------------------------------------------------|---------|
| <i>Strophites grandaeva</i> , Dawson, pl. i, fig. 1.....              | 49, 455 |
| <i>Anodonta? angustata</i> (Vanuxem), Hall, pl. i, figs. 2 and 3..... | 18, 424 |
| <i>Anodonta? catskillensis</i> (Vanuxem), Hall, pl. i, fig. 4.....    | 18, 424 |

CARBONIFEROUS.

|                                                                     |         |
|---------------------------------------------------------------------|---------|
| <i>Pupa vetusta</i> , Dawson, pl. ii, figs. 1 and 2.....            | 50, 456 |
| <i>Davsonella meeki</i> , Bradley, pl. ii, figs. 3 and 4.....       | 47, 453 |
| <i>Anthracopupa ohioensis</i> , Whitfield, pl. ii, figs. 5-8.....   | 50, 456 |
| <i>Pupa bigsbyi</i> , Dawson, pl. ii, figs. 9 and 10.....           | 50, 456 |
| <i>Pupa vermillionensis</i> , Bradley, pl. ii, figs. 13 and 14..... | 50, 456 |
| <i>Zonites priscus</i> , Dawson, pl. ii, figs. 11 and 12.....       | 47, 453 |
| <i>Naiadites carbonaria</i> , Dawson, pl. ii, fig. 15.....          | 19, 425 |
| <i>Naiadites elongata</i> , Dawson, pl. ii, fig. 16.....            | 19, 425 |
| <i>Naiadites lewis</i> , Dawson, pl. ii, fig. 17.....               | 19, 425 |

JURASSIC AND TRIASSIC. (?)

|                                                                    |         |
|--------------------------------------------------------------------|---------|
| <i>Unio stewardii</i> , White, pl. iii, fig. 1.....                | 20, 426 |
| <i>Unio nucalis</i> , M. & H., pl. iii, figs. 2-4.....             | 20, 426 |
| <i>Unio cristenensis</i> , Meek, pl. iii, fig. 5.....              | 19, 425 |
| <i>Planorbis veternus</i> , M. & H., pl. iii, fig. 6.....          | 40, 446 |
| <i>Valvata scabrida</i> , M. & H., pl. iii, fig. 7.....            | 64, 470 |
| <i>Viviparus gillianus</i> , M. & H., pl. iii, fig. 8.....         | 60, 470 |
| <i>Lioplacodes veternus</i> , M. & H., pl. iii, fig. 9.....        | 60, 470 |
| <i>Neritina nebrascensis</i> , M. & H., pl. iii, figs. 10, 11..... | 51, 457 |

CRETACEOUS.

|                                                                         |         |
|-------------------------------------------------------------------------|---------|
| <i>Margaritana nebrascensis</i> , M. & H., pl. iv, figs. 1 and 2.....   | 21, 427 |
| <i>Oyrena dakotensis</i> , M. & H., pl. iv, figs. 3 and 4.....          | 30, 436 |
| <i>Physa</i> — ? White, 1879, pl. iv, fig. 5.....                       | 38, 444 |
| <i>Unio penultimus</i> , Gabb, pl. v, fig. 1.....                       | 21, 427 |
| <i>Unio hubbardii</i> , Gabb, pl. v, figs. 2 and 3.....                 | 21, 477 |
| <i>Cyrena carletoni</i> , Meek, pl. v, figs. 4 and 5.....               | 30, 436 |
| <i>Anomia propatoris</i> , White, pl. v, figs. 6 and 7.....             | 16, 422 |
| <i>Neritina (Velatella) bellatula</i> , Meek, pl. v, figs. 8 and 9..... | 52, 458 |
| <i>Neritina (Velatella) carditoides</i> , Meek, pl. v, fig. 10.....     | 52, 458 |
| <i>Neritina banisteri</i> , Meek, pl. v, figs. 11 and 12.....           | 52, 458 |
| <i>Melampus? antiquus</i> , Meek, pl. v, figs. 13-16.....               | 38, 444 |
| <i>Melampus?</i> — —, Meek, 1873, pl. v, fig. 17.....                   | 38, 444 |
| <i>Physa carletoni</i> , Meek, pl. v, fig. 18.....                      | 43, 449 |
| <i>Valvata nana</i> , Meek, pl. v, figs. 19 and 20.....                 | 64, 470 |

## BEAR RIVER, LARAMIE.

|                                                                    | Page    |
|--------------------------------------------------------------------|---------|
| <i>Unio belliplicatus</i> , Meek, pl. vi, figs. 1-3                | 24, 426 |
| <i>Pyrulifera humerosa</i> , Meek, pl. vi, figs. 4-6               | 24, 426 |
| <i>Goniobasis cleburni</i> , White, pl. vi, figs. 7-9              | 26, 462 |
| <i>Goniobasis chrysalloides</i> , White, pl. vi, figs. 10 and 11   | 26, 462 |
| <i>Goniobasis macilenta</i> , White, pl. vi, fig. 12               | 26, 462 |
| <i>Goniobasis chrysalis</i> , Meek, pl. vi, figs. 13 and 14        | 26, 462 |
| <i>Limnæa (Limnophya) nitidula</i> , Meek, pl. vi, figs. 15 and 16 | 29, 447 |
| <i>Phya</i> — ? White, 1880, pl. vi, fig. 17                       | 43, 449 |
| <i>Limnæa (Acella) haldemani</i> , White, pl. vi, figs. 19 and 20  | 29, 447 |
| <i>Unio vetustus</i> , Meek, pl. vii, figs. 1-4                    | 24, 430 |
| <i>Neritina naticiformis</i> , White, pl. vii, figs. 5 and 6       | 22, 458 |
| <i>Goniobasis endlichi</i> , White, pl. vii, figs. 7-9             | 27, 433 |
| <i>Viviparus couesi</i> , White, pl. viii, fig. 1                  | 61, 467 |
| <i>Rhytophorus priscus</i> , Meek, pl. viii, figs. 2 and 3         | 28, 444 |
| <i>Rhytophorus meeki</i> , White, pl. viii, figs. 4 and 5          | 28, 444 |
| <i>Campeloma macrospira</i> , Meek, pl. viii, figs. 6 and 7        | 61, 469 |
| <i>Corbicula (Veloritina) durkei</i> , Meek, pl. viii, figs. 8-11  | 31, 437 |
| <i>Corbicula pyriformis</i> , Meek, pl. viii, figs. 12-16          | 35, 441 |

## LARAMIE.

|                                                                                        |         |
|----------------------------------------------------------------------------------------|---------|
| <i>Ostrea glabra</i> , M. & H., pls. ix-xi, and pl. xii, fig. 1                        | 15, 421 |
| <i>Ostrea subtrigonalis</i> , Evans & Shumard, pl. xii, figs. 2-5                      | 15, 421 |
| <i>Anomia micronema</i> , Meek, pl. xii, figs. 6-11                                    | 16, 422 |
| <i>Anomia gryphorhynchus</i> , Meek, pl. xii, figs. 12-15                              | 16, 422 |
| <i>Valatella (Brachydontes) regularis</i> , White, pl. xiii, fig. 1                    | 17, 423 |
| <i>Valatella (Brachydontes) laticostata</i> , White, pl. xiii, fig. 2                  | 17, 423 |
| <i>Unio procerus</i> , White, pl. xiii, figs. 3-6                                      | 27, 433 |
| <i>Unio gonionotus</i> , White, pl. xiii, figs. 7-10                                   | 27, 433 |
| <i>Unio priscus</i> , M. & H., pl. xiv, fig. 1                                         | 26, 432 |
| <i>Unio subopaculatus</i> , Meek, pl. xiv, figs. 2 and 3                               | 25, 431 |
| <i>Unio primarius</i> , White, pl. xiv, figs. 4 and 5                                  | 26, 432 |
| <i>Unio cryptorhynchus</i> , White, pl. xiv, figs. 6 and 7                             | 25, 431 |
| <i>Unio endlichi</i> , White, pl. xv, figs. 1 and 2                                    | 26, 432 |
| <i>Unio propheticus</i> , White, pl. xv, fig. 3                                        | 27, 433 |
| <i>Unio adriaci</i> , White, pl. xv, figs. 4, 5                                        | 27, 433 |
| <i>Unio couesi</i> , White, pl. xvi, fig. 1                                            | 26, 432 |
| <i>Unio holmesianus</i> , White, pl. xvi, figs. 2-6                                    | 27, 433 |
| <i>Unio deshayesi</i> , White, pl. xvi, figs. 7 and 8                                  | 27, 433 |
| <i>Unio dani</i> , M. & H., pl. xvii, figs. 1-3                                        | 25, 431 |
| <i>Unio devesianus</i> , M. & H., pl. xvii, figs. 4 and 5                              | 25, 431 |
| <i>Corbicula occidentalis</i> , M. & H., pl. xvii, figs. 6 and 7, pl. xviii, figs. 1-6 | 31, 437 |
| <i>Sphaerium pium</i> , M. & H., pl. xvii, fig. 8                                      | 33, 439 |
| <i>Sphaerium recticordiale</i> , M. & H., pl. xvii, fig. 9                             | 33, 439 |
| <i>S. subellipticum</i> , M. & H., pl. xvii, fig. 10                                   | 33, 439 |
| <i>S. formosum</i> , M. & H., pl. xvii, fig. 11                                        | 33, 439 |
| <i>Unio mendax</i> , White, pl. xviii, figs. 3-5                                       | 27, 433 |
| <i>Unio dani</i> , M. & H., ? pl. xviii, figs. 1 and 2                                 | 27, 433 |
| <i>Corbula undulata</i> , Meek, pl. xviii, figs. 6-9                                   | 36, 440 |
| <i>Corbula undulata</i> var. <i>subundulata</i> , White, pl. xviii, figs. 10 and 11    | 36, 440 |
| <i>Corbula macroformis</i> , M. & H., pl. xviii, figs. 12-15                           | 36, 440 |
| <i>Unio amatus</i> , White, pl. xix, figs. 1 and 2                                     | 26, 432 |
| <i>Unio gonionotus</i> , White, pl. xix, figs. 3 and 4                                 | 27, 433 |
| <i>Amudonta parvula</i> , White, pl. xix, fig. 5                                       | 25, 429 |
| <i>Amudonta propinqua</i> , White, pl. xix, figs. 6-9                                  | 25, 429 |
| <i>Corbula subtrigonalis</i> , M. & H., pl. xix, figs. 10-17                           | 36, 442 |
| <i>Corbula (Lophostoma) macla</i> , Meek, pl. xx, figs. 1-6                            | 32, 438 |
| <i>Corbicula subarata</i> , White, pl. xx, figs. 7-9                                   | 31, 437 |
| <i>Corbicula subelliptica</i> , M. & H., pl. xx, figs. 10 and 11                       | 31, 437 |
| <i>Corbicula subarata</i> , M. & H., pl. xx, figs. 12 and 13                           | 31, 437 |
| <i>Problema unguiculata</i> , White, pl. xx, figs. 14 and 15                           | 34, 440 |
| <i>Corbicula berthoudi</i> , White, pl. xxi, figs. 1-3                                 | 22, 438 |
| <i>Corbicula unguis</i> , n. s., White, 1883, pl. xxi, figs. 4-6                       | 22, 438 |
| <i>Corbicula ventralis</i> , Meek, pl. xxi, figs. 7-10                                 | 22, 438 |
| <i>Problema (Lophostoma) macrostoma</i> , White, pl. xxi, figs. 11-14                  | 31, 437 |



|                                                                                          | Page.   |
|------------------------------------------------------------------------------------------|---------|
| <i>Corbicula cytheriformis</i> , M. & H., pl. xxii, figs. 1-6.....                       | 31, 437 |
| <i>Corbicula (Leptæthes) planumbona</i> , Meek, pl. xxii, figs. 7-9.....                 | 31, 437 |
| <i>Corbicula (Leptæthes) cardiniformis</i> , White, pl. xxii, figs. 10-15.....           | 31, 437 |
| <i>Corbicula obesa</i> , White, pl. xxiii, figs. 7-11.....                               | 31, 437 |
| <i>Neritina volutelineata</i> , White, pl. xxiii, figs. 12 and 13.....                   | 52, 458 |
| <i>Neritina bruneri</i> , White, pl. xxiii, figs. 14 and 15.....                         | 53, 459 |
| <i>Neritina (Velatella) baptista</i> , White, pl. xxiii, figs. 16-20.....                | 52, 458 |
| <i>Melanopsis americana</i> , n. g., White, 1883, pl. xxiii, figs. 21-23.....            | 55, 461 |
| <i>Limnæa (Pleurolimnæa) tenuicostata</i> , M. & H., pl. xxiii, fig. 24.....             | 39, 445 |
| <i>Cassiopella turricula</i> , White, pl. xxiii, figs. 25-29.....                        | 58, 464 |
| <i>Viciparus retusus</i> , M. & H., pl. xxiv, figs. 1-3.....                             | 61, 467 |
| <i>Viciparus conradi</i> , M. & H., pl. xxiv, figs. 4-6.....                             | 61, 467 |
| <i>Viciparus leidy</i> , M. & H., pl. xxiv, fig. 7.....                                  | 61, 467 |
| <i>Viciparus leidy</i> var. <i>formosus</i> , M. & H., pl. xxiv, figs. 8 and 9.....      | 61, 467 |
| <i>Viciparus trochiformis</i> , M. & H., pl. xxiv, figs. 10-16.....                      | 61-467  |
| <i>Tulotoma thompsoni</i> , White, pl. xxiv, figs. 17-22.....                            | 61, 467 |
| <i>Viciparus peculiaris</i> , M. & H., pl. xxiv, figs. 23 and 24.....                    | 61, 467 |
| <i>Viciparus plicapressus</i> , White, pl. xxiv, figs. 25 and 26.....                    | 61, 467 |
| <i>Acroloxus minutus</i> , M. & H., pl. xxiv, fig. 27.....                               | 45, 451 |
| <i>Physa copei</i> , White, pl. xxv, figs. 1 and 2.....                                  | 44, 450 |
| <i>Physa felix</i> , White, pl. xxv, fig. 3.....                                         | 44, 450 |
| <i>Bulinus disjunctus</i> , White, pl. xxv, figs. 4 and 5.....                           | 45, 451 |
| <i>Bulinus atavus</i> , White, pl. xxv, figs. 6 and 7.....                               | 44, 450 |
| <i>Bulinus longiusculus</i> , M. & H., pl. xxv, fig. 8.....                              | 45, 451 |
| <i>Bulinus rhomboideus</i> , M. & H., pl. xxv, fig. 9.....                               | 45, 451 |
| <i>Bulinus subelongatus</i> , M. & H., pl. xxv, figs. 10 and 11.....                     | 44, 450 |
| <i>Helix kanabensis</i> , White, pl. xxv, figs. 12-14.....                               | 48, 454 |
| <i>Columna teres</i> , M. & H., pl. xxv, fig. 15.....                                    | 48, 454 |
| <i>Columna vermicula</i> , M. & H., pl. xxv, fig. 16.....                                | 48, 454 |
| <i>Viciparus prudentius</i> , White, pl. xxv, figs. 17 and 18.....                       | 61, 467 |
| <i>Viciparus panguitchensis</i> , White, pl. xxv, figs. 19-21.....                       | 61, 467 |
| <i>Viciparus reynoldianus</i> , M. & H., pl. xxv, figs. 22 and 23.....                   | 61, 467 |
| <i>Thaumastus limnæiformis</i> , M. & H., pl. xxv, fig. 24.....                          | 48, 454 |
| <i>Melania wyomingensis</i> , Meek, pl. xxvi, figs. 1-3.....                             | 54, 460 |
| <i>Melania insculpta</i> , Meek, pl. xxvi, figs. 4 and 5.....                            | 54, 460 |
| <i>Goniobasis convexa</i> , M. & H., pl. xxvi, figs. 6 and 7.....                        | 57, 463 |
| <i>Goniobasis convexa</i> var. <i>impressa</i> , M. & H., pl. xxvi, figs. 8 and 9.....   | 57, 463 |
| <i>Goniobasis</i> ? <i>omitta</i> , M. & H., pl. xxvi, fig. 10.....                      | 57, 463 |
| <i>Goniobasis tenuicarinata</i> , M. & H., pl. xxvi, fig. 11.....                        | 57, 463 |
| <i>Goniobasis gracilentia</i> , Meek, pl. xxvi, figs. 12 and 13.....                     | 57, 463 |
| <i>Goniobasis nebrascensis</i> , M. & H., pl. xxvi, figs. 15 and 16.....                 | 57, 463 |
| <i>Goniobasis invenusta</i> , M. & H., pl. xxvi, fig. 17.....                            | 57, 463 |
| <i>Goniobasis sublaevis</i> , M. & H., pl. xxvi, fig. 18.....                            | 57, 463 |
| <i>Limnæa</i> ? <i>compactilis</i> , Meek, pl. xxvi, fig. 14.....                        | 39, 445 |
| <i>Cerithidea</i> ? <i>nebrascensis</i> , M. & H., pl. xxvi, fig. 19.....                | 57, 463 |
| <i>Micropyrgus minutulus</i> , M. & H., pl. xxvi, fig. 20.....                           | 59, 465 |
| <i>Campeloma producta</i> , White, pl. xxvi, figs. 21-27.....                            | 63, 469 |
| <i>Campeloma multilineata</i> , M. & H., pl. xxvii, figs. 1-7.....                       | 63, 469 |
| <i>Campeloma vetula</i> , M. & H., pl. xxvii, figs. 8 and 9.....                         | 63, 469 |
| <i>Campeloma multistriata</i> , M. & H., pl. xxvii, fig. 15.....                         | 63, 469 |
| <i>Viciparus lei</i> , M. & H., pl. xxvii, figs. 10-14.....                              | 61, 467 |
| <i>Planorbis convolutus</i> , M. & H., pl. xxvii, fig. 16.....                           | 41, 447 |
| <i>Planorbis (Bathymorphalus) planconceus</i> , M. & H., pl. xxvii, figs. 17 and 18..... | 41, 447 |
| <i>Planorbis (Bathymorphalus) amplexus</i> , M. & H., pl. xxvii, figs. 19 and 20.....    | 41, 447 |
| <i>Planorbis (Bathymorphalus) kanabensis</i> , M. & H., pl. xxvii, figs. 21-23.....      | 41, 447 |
| <i>Valcata</i> ? <i>montanaensis</i> , Meek, pl. xxvii, fig. 24.....                     | 64, 470 |
| <i>Valcata subumbilicata</i> , M. & H., pl. xxvii, fig. 25.....                          | 64, 470 |
| <i>Hyalina</i> ? <i>evansi</i> , M. & H., pl. xxvii, fig. 26.....                        | 46, 452 |
| <i>Hyalina</i> ? <i>occidentalis</i> , M. & H., pl. xxvii, fig. 27.....                  | 46, 452 |
| <i>Helix</i> ? <i>vetusta</i> , M. & H., pl. xxvii, fig. 28.....                         | 48, 454 |
| <i>Helix evanstonensis</i> , White, pl. xxvii, figs. 29-31.....                          | 48, 454 |
| <i>Helix sepulta</i> , White.....                                                        | 48, 454 |
| <i>Vitrina obliqua</i> , M. & H., pl. xxvii, figs. 32 and 33.....                        | 46, 452 |
| <i>Goniobasis</i> ? <i>subtortuosa</i> , M. & H., pl. xxvii, fig. 34.....                | 57, 463 |
| <i>Hydrobia utahensis</i> , White, pl. xxvii, fig. 35.....                               | 60, 466 |

|                                                                     | Page.   |
|---------------------------------------------------------------------|---------|
| <i>Hydrobia subconica</i> , Meek, pl. xxvii, fig. 36.....           | 50, 465 |
| <i>Hydrobia</i> ? <i>eulimoides</i> , Meek, pl. xxvii, fig. 37..... | 50, 465 |
| <i>Hydrobia recta</i> , White, pl. xxvii, fig. 38.....              | 60, 466 |
| <i>Hydrobia anthonyi</i> , M. & H., pl. xxvii, fig. 39.....         | 50, 465 |
| <i>Hydrobia warrenana</i> , M. & H., pl. xxvii, fig. 40.....        | 50, 465 |

## EOCENE.

|                                                                                     |         |
|-------------------------------------------------------------------------------------|---------|
| <i>Unio clinopiasthus</i> , White, pl. xxviii, figs. 1 and 2.....                   | 28, 434 |
| <i>Unio shoshonensis</i> , White, pl. xxviii, fig. 3.....                           | 29, 435 |
| <i>Unio haydeni</i> , Meek, pl. xxviii, figs. 4 and 5.....                          | 29, 435 |
| <i>Unio washakiensis</i> , Meek, pl. xxviii, figs. 6-8.....                         | 29, 435 |
| <i>Unio tellinoides</i> , Hall, pl. xxviii, fig. 9.....                             | 29, 435 |
| <i>Planorbis (Gyraulus) militaria</i> , White, pl. xxviii, figs. 10 and 11.....     | 41, 447 |
| <i>Bythinella gregaria</i> , Meek, pl. xxviii, figs. 12 and 13.....                 | 60, 466 |
| <i>Bulinus floridanus</i> , Conrad, pl. xxviii, fig. 14.....                        | 48, 454 |
| <i>Melania claidbornensis</i> , Heilprin, pl. xxviii, fig. 15.....                  | 54, 460 |
| <i>Planorbis utahensis</i> , Meek, pl. xxix, figs. 1-3.....                         | 41, 447 |
| <i>Planorbis utahensis</i> var. <i>spectabilis</i> , Meek, pl. xxix, figs. 4-6..... | 41, 447 |
| <i>Planorbis cirratus</i> , White, pl. xxix, fig. 7.....                            | 42, 448 |
| <i>Planorbis æqualis</i> , White, pl. xxix, figs. 8-10.....                         | 42, 448 |
| <i>Helix peripheria</i> , White, pl. xxix, figs. 11 and 12.....                     | 49, 455 |
| <i>Helix riparia</i> , White, pl. xxix, figs. 13 and 14.....                        | 49, 455 |
| <i>Pupa incolata</i> , White, pl. xxix, figs. 15-17.....                            | 50, 456 |
| <i>Pupa atavuncula</i> , White, pl. xxix, fig. 18.....                              | 50, 456 |
| <i>Pupa arenula</i> , White, pl. xxix, fig. 19.....                                 | 50, 456 |
| <i>Limnæa similis</i> , Meek, pl. xxix, figs. 20 and 21.....                        | 39, 445 |
| <i>Limnæa retusta</i> , Meek, pl. xxix, figs. 22 and 23.....                        | 39, 445 |
| <i>Limnæa minuscula</i> , White, pl. xxix, figs. 24 and 25.....                     | 40, 446 |
| <i>Succinea (Brachyspira) papillispira</i> , White, pl. xxix, fig. 26.....          | 51, 457 |
| <i>Anodonta decurtata</i> , Conrad, pl. xxix, figs. 27 and 28.....                  | 73, 479 |
| <i>Macrocyclus spatiosa</i> , M. & H., pl. xxx, figs. 1-3.....                      | 46, 453 |
| <i>Helix</i> ? <i>veterna</i> , M. & H., pl. xxx, figs. 4 and 5.....                | 48, 454 |
| <i>Physa pleromatis</i> , White, pl. xxx, figs. 6-8.....                            | 44, 450 |
| <i>Physa brülgerensis</i> , Meek, pl. xxx, figs. 9 and 10.....                      | 44, 450 |
| <i>Viviparus paludinæformis</i> , Hall, pl. xxx, figs. 11 and 12.....               | 63, 468 |
| <i>Viviparus wyomingensis</i> , Meek, pl. xxx, figs. 13 and 14.....                 | 62, 468 |
| <i>Goniobasis tenera</i> , Hall, and varieties, pl. xxxi.....                       | 58, 464 |

## MIOCENE AND PLIOCENE!

|                                                                                  |         |
|----------------------------------------------------------------------------------|---------|
| <i>Melania sculptilis</i> , Meek, pl. xxxii, fig. 1.....                         | 55, 461 |
| <i>Melania subsculptilis</i> , Meek, pl. xxxii, fig. 2.....                      | 55, 461 |
| <i>Melania taylori</i> , Gabb, pl. xxxii, fig. 3.....                            | 55, 461 |
| <i>Lithasia antiqua</i> , Gabb, pl. xxxii, fig. 4.....                           | 50, 465 |
| <i>Carinifex (Vorticifex) binneyi</i> , Meek, pl. xxxii, figs. 5 and 6.....      | 42, 448 |
| <i>Carinifex (Vorticifex) tryoni</i> , Meek, pl. xxxii, figs. 7-9.....           | 42, 448 |
| <i>Ancylus undulatus</i> , Meek, pl. xxxii, fig. 10.....                         | 45, 451 |
| <i>Sphaerium rugosum</i> , Meek, pl. xxxii, figs. 11-13.....                     | 34, 440 |
| <i>Sphaerium idahoense</i> , Meek, pl. xxxii, figs. 14 and 15.....               | 34, 440 |
| <i>Planorbis retustus</i> , M. & H., pl. xxxii, figs. 16-18.....                 | 42, 448 |
| <i>Planorbis leidyi</i> , M. & H., pl. xxxii, figs. 19-21.....                   | 42, 448 |
| <i>Planorbis nebrascensis</i> , Evans & Shumard, pl. xxxii, figs. 22 and 23..... | 42, 448 |
| <i>Planorbis lunata</i> , Conrad, pl. xxxii, figs. 24 and 25.....                | 42, 448 |
| <i>Limnæa meekii</i> , Evans & Shumard, pl. xxxii, figs. 26 and 27.....          | 40, 446 |
| <i>Limnæa shumardi</i> , M. & H., pl. xxxii, figs. 28 and 29.....                | 40, 446 |
| <i>Limnæa (Polyrhytis) kingii</i> , Meek, pl. xxxii, figs. 30 and 31.....        | 40, 446 |
| <i>Helix leidyi</i> , Hall & Meek, pl. xxxii, figs. 32 and 33.....               | 49, 455 |
| <i>Helix (Zonites) marginicola</i> , Conrad, pl. xxxii, fig. 34.....             | 47, 453 |
| <i>Physa secalina</i> , Evans & Shumard, pl. xxxii, figs. 35 and 36.....         | 44, 450 |
| <i>Latia dallii</i> , n. s. White, 1883, pl. xxxii, figs. 37-40.....             | 45, 451 |
| <i>Unio meekii</i> , White.....                                                  | 28, 434 |
| <i>Unio leai</i> , Meek.....                                                     | 28, 434 |
| <i>Viviparus ionicus</i> , White.....                                            | 62, 468 |



116.

WHITE, C. A. Progress of Invertebrate Paleontology in the United States for the year 1882. < Amer. Nat., vol. xvii, pp. 598-603. Philadelphia, 1883.

Same. Philadelphia, 1883. 8vo, pp. 598-603. One hundred separates printed without title-page, covers, or repaging.

This series of articles, which was begun for the year 1879, was discontinued with this article; but the series is continued by Mr. J. B. Marcon.

117.

WHITE, C. A. Glacial Drift in the Upper Missouri River Region. < Amer. Jour. Sci., 3d ser., vol. xxv, p. 206. New Haven, 1883.

Same. New Haven, 1883. 8vo, p. 206. Twenty separates printed without title-page, covers, or repaging.

The existence of true northern glacial drift in the region of the mouth of the Yellowstone River is announced.

118.

WHITE, C. A. Late observations concerning the Molluscan Fauna and the Geographical extent of the Laramie Group. < Amer. Jour. Sci., 3d ser., vol. xxv, pp. 207-209. New Haven, 1883.

Same. New Haven, 1883. 8vo, pp. 207-209. Twenty separates printed without title-page, covers, or repaging.

The discovery of Laramie fossils in the State of Nuevo Leon, Mexico, and in the Saskatchewan Valley, British America, is announced.

119.

WHITE, C. A. On the existence of a deposit in Northeastern Montana and Northwestern Dakota, that is possibly equivalent with the Green River Group. < Amer. Jour. Sci., 3d ser., vol. xxv, pp. 411-416. New Haven, 1883.

Same. New Haven, 1883. 8vo, pp. 411-416. Twenty separates printed without title-page, covers, or repaging.

Some teleost fish remains were obtained from certain layers which rest conformably upon the top of the Laramie Group. On pages 414-416 of this article Prof. E. D. Cope describes a new genus of fishes and two species.

120.

WHITE, C. A. The burning of Lignite in situ. < Amer. Jour. Sci., 3d ser., vol. xxvi, pp. 24-26. New Haven, 1883.

Same. New Haven, 1883. 8vo, pp. 24-26. Twenty separates printed without title-page, covers, or repaging.

The opinion is advanced that the burning of the beds of lignite of the Laramie Group has been mainly the result of spontaneous ignition, and that these fires probably began as early as the later Tertiary and before the advent of man.

121.

WHITE, C. A. On the commingling of ancient faunal and modern floral types in the Laramie Group. < Amer. Jour. Sci., 3d ser., vol. xxvi, pp. 120-123. New Haven, 1883.

Same. New Haven, 1883. 8vo, pp. 120-123. Twenty separates printed without title-page, covers, or repaging.

It is shown that well-known species of Miocene plants are found associated with Dinosaurs and characteristic Laramie mollusks.

## 122.

WHITE, C. A. [Administrative report for the year 1882-'83.] < Fourth Annual Report of the Director of the United States Geological Survey, pp. 42-44. Washington, 1883.

## 123.

WHITE, C. A. A review of the Fossil Ostreidæ of North America; and a comparison of the fossil with the living forms. < Fourth Annual Report of the Director of the United States Geological Survey. pp. 281-333, and pls. xxxiv-lxxvi. Washington, 1883.

Same. Washington: Government Printing Office, 1883. Imp. 8vo, pp. 281-333, and pls. xxxiv-lxxvi. One hundred separates printed with paper covers and title-page, but without repaging.

This work is an annotated catalogue of the species. It contains two appendices, by Prof. A. Heilprin and Mr John A. Ryder, respectively. The former is on the North American Tertiary Ostreidæ. pp. 309-316, and pls. lxxi-lxxii. The latter is a sketch of the life-history of the oyster. pp. 317-333, and pls. lxxiii-lxxvi.

## CARBONIFEROUS.

|                                                                | Page. |
|----------------------------------------------------------------|-------|
| <i>Ostrea</i> , Linnæus .....                                  | 28    |
| <i>O. patercula</i> , Winchell, pl. xxxiv, figs. 1 and 2 ..... | 28    |

## JURASSIC.

|                                                                                               |       |
|-----------------------------------------------------------------------------------------------|-------|
| <i>Ostrea</i> , Linnæus .....                                                                 | 29    |
| <i>O. engelmanni</i> , Meek, pl. xxxiv, figs. 3 and 4 .....                                   | 29    |
| <i>O. strigilecula</i> , White, pl. xxxv, figs. 9-11 .....                                    | 29-30 |
| <i>O. (Alectryonia) procumbens</i> , White, pl. xxxv, figs. 6-8 .....                         | 30    |
| <i>Gryphæa</i> , Lamarck .....                                                                | 30    |
| <i>G. calceola</i> , Quenstedt, var. <i>nebrascensis</i> , M. & H., pl. xxxv, figs. 1-5 ..... | 30    |

## CRETACEOUS.

|                                                                                                    |         |
|----------------------------------------------------------------------------------------------------|---------|
| <i>Ostrea</i> , Linnæus .....                                                                      | 291     |
| <i>O. americana</i> , Deshayes, pl. lvi, figs. 1 and 2, pl. lvii, figs. 1 and 2 .....              | 291     |
| <i>O. anomiaformis</i> , Roemer .....                                                              | 291     |
| <i>O. anomioides</i> , Meek, pl. xxxix .....                                                       | 291     |
| <i>O. appressa</i> , Gabb, pl. xxxix, fig. 9 .....                                                 | 291-292 |
| <i>O. bella</i> , Conrad, pl. xxxix, fig. 6 .....                                                  | 292     |
| <i>O. bellorugosa</i> , Shumard .....                                                              | 292     |
| <i>O. belliplicata</i> , Shumard, pl. lxxviii, figs. 1-3 .....                                     | 292     |
| <i>O. blackii</i> , White, pl. xlv, fig. 1, and pl. xlvi, fig. 2 .....                             | 292     |
| <i>O. barrandei</i> , Coquand, pl. xlv, figs. 1 and 2, pl. xlv, fig. 2, and pl. xlvi, fig. 1 ..... | 292-293 |
| <i>O. breweri</i> , Gabb .....                                                                     | 293     |
| <i>O. bryani</i> , Gabb .....                                                                      | 293     |
| <i>O. carinata</i> (Lamarck), Roemer, pl. xliii, figs. 1-4 .....                                   | 293     |
| <i>O. coalvillensis</i> , Meek, pl. xxxvi, figs. 1-4 .....                                         | 293     |
| <i>O. confragosa</i> , Conrad .....                                                                | 293     |
| <i>O. congesta</i> , Conrad, pl. xxxix, figs. 11-13 .....                                          | 294     |
| <i>O. convexa</i> , Say, pl. xlviii, figs. 1-5 .....                                               | 294     |
| <i>O. cortex</i> , Conrad, pl. xxxvii, figs. 3 and 4 .....                                         | 294     |
| <i>O. crenulata</i> , Tuomey .....                                                                 | 294     |
| <i>O. crenulimargo</i> , Roemer, pl. xliii, figs. 8, 9 .....                                       | 294     |
| <i>O. crenulimarginata</i> , Gabb, pl. xl, fig. 2 .....                                            | 294     |
| <i>O. cretacea</i> , Morton, Owen, pl. xxxix, figs. 1-3 .....                                      | 294-295 |
| <i>O. denticulifera</i> , Conrad .....                                                             | 295     |
| <i>O. diluviana</i> , Linnæus, pl. xl, fig. 1, pl. xli, figs. 1 and 2 .....                        | 295     |
| <i>O. elegantula</i> , Newberry, pl. xxxvi, figs. 5-7 .....                                        | 295     |
| <i>O. exogyrella</i> , Gabb .....                                                                  | 295     |
| <i>O. falcata</i> , Morton, pl. xlii, figs. 2-9 .....                                              | 295     |
| <i>O. franklini</i> , Coquand, pl. xxxix, figs. 1-3 .....                                          | 295     |
| <i>O. gabbanna</i> , M. & H. ....                                                                  | 295     |



|                                                                                    | Page.   |
|------------------------------------------------------------------------------------|---------|
| <i>O. inornata</i> , Meek .....                                                    | 296     |
| <i>O. idriensis</i> , Gabb, pl. xxxiv, figs. 7 and 8 .....                         | 296     |
| <i>O. (Alectryonia) larva</i> , Lamarek, pl. xlii, figs. 2-9 .....                 | 296     |
| <i>O. lateralis</i> , Nilsson .....                                                | 297     |
| <i>O. littlei</i> , Gabb .....                                                     | 297     |
| <i>O. lugubris</i> , Conrad, pl. xli, fig. 3 .....                                 | 297     |
| <i>O. lyoni</i> , Shumard .....                                                    | 297     |
| <i>O. malleiformis</i> , Gabb, pl. i, fig. 8 .....                                 | 297     |
| <i>O. mesenterica</i> , Morton, pl. xlii, figs. 2-9 .....                          | 297     |
| <i>O. mortoni</i> , Gabb .....                                                     | 297     |
| <i>O. multilirata</i> , Conrad, pl. xxxviii, figs. 1 and 2 .....                   | 298     |
| <i>O. nasuta</i> , Morton, pl. xlii, figs. 2-9 .....                               | 298     |
| <i>O. owenana</i> , Shumard .....                                                  | 298     |
| <i>O. panda</i> , Morton .....                                                     | 298     |
| <i>O. pandaeformis</i> , Gabb .....                                                | 298     |
| <i>O. patina</i> , M. & H., pl. xlvii, figs. 4-6 .....                             | 298     |
| <i>O. peculiaris</i> , Conrad .....                                                | 298     |
| <i>O. pellucida</i> , M. & H., pl. i, figs. 6 and 7 .....                          | 299     |
| <i>O. planovata</i> , Shumard .....                                                | 299     |
| <i>O. plumosa</i> , Morton, pl. xxxvii, figs. 5 and 6 .....                        | 299     |
| <i>O. prudentia</i> , White, pl. xi, figs. 5 and 6 .....                           | 299     |
| <i>O. quadruplicata</i> , Shumard, pl. xliii, figs. 5-7 .....                      | 299-300 |
| <i>O. robusta</i> , Conrad, pl. xi, figs. 3 and 4 .....                            | 300     |
| <i>O. sannionis</i> , White, pl. xlv, figs. 3-7 .....                              | 300     |
| <i>O. soleniscus</i> , Meek, pl. xlii, fig. 1 .....                                | 300     |
| <i>O. subalata</i> , Meek, pl. xxxix, fig. 10 .....                                | 300     |
| <i>O. subovata</i> , Shumard .....                                                 | 301     |
| <i>O. subepatulata</i> , Forbes, pl. xxxvii, figs. 1 and 2 .....                   | 301     |
| <i>O. tecticostata</i> , Gabb, pl. i, figs. 3 and 4 .....                          | 301     |
| <i>O. torosa</i> , Morton .....                                                    | 301     |
| <i>O. translucida</i> , M. & H. ....                                               | 301     |
| <i>O. tuomeyi</i> , Coquand .....                                                  | 301-302 |
| <i>O. uniformis</i> , Meek, pl. xlviii, figs. 6 and 7 .....                        | 302     |
| <i>O. velicata</i> , Conrad .....                                                  | 302     |
| <i>O. vomer</i> , Morton, pl. xlviii, figs. 8-10 .....                             | 302     |
| <i>Gryphaea</i> , Lamarek .....                                                    | 302     |
| <i>G. mucronata</i> , Gabb .....                                                   | 302     |
| <i>G. mutabilis</i> , Morton, pl. xlviii, figs. 1-5 .....                          | 302     |
| <i>G. navia</i> , Conrad .....                                                     | 302     |
| <i>G. pitcheri</i> , Morton, pl. xlix, figs. 1-6 .....                             | 302-303 |
| <i>G. thirsa</i> , Gabb .....                                                      | 303     |
| <i>G. vesicularis</i> , Lamarek, pl. xlviii, figs. 1-5 .....                       | 303     |
| <i>G. vomer</i> , Morton .....                                                     | 303     |
| <i>Exogyra</i> , Say .....                                                         | 303     |
| <i>E. arietina</i> , Roemer, pl. lvi, figs. 3-5 .....                              | 303-304 |
| <i>E. aquila</i> , Goldfuss, pl. liii, figs. 1 and 2 .....                         | 304     |
| <i>E. columbella</i> , Meek, pl. lv, figs. 5 and 6 .....                           | 304     |
| <i>E. costata</i> , Say, pl. lvi, figs. 1 and 2, and pl. lvii, figs. 1 and 2 ..... | 304     |
| <i>E. funbriata</i> , Conrad .....                                                 | 305     |
| <i>E. forniculata</i> , White, pl. lii, figs. 1 and 2 .....                        | 305     |
| <i>E. fragosa</i> , Conrad .....                                                   | 305     |
| <i>E. interrupta</i> , Conrad .....                                                | 305     |
| <i>E. keviuscula</i> , Roemer, pl. lii, figs. 3-5 .....                            | 305-306 |
| <i>E. matheroniana</i> , d'Orbigny .....                                           | 306     |
| <i>E. plicata</i> , Lamarek .....                                                  | 306     |
| <i>E. ponderosa</i> , Roemer, pl. i, figs. 1 and 2 .....                           | 306     |
| <i>E. parasitica</i> , Gabb, pl. lv, figs. 3 and 4 .....                           | 306     |
| <i>E. texana</i> , Roemer, pl. li, figs. 1-5 .....                                 | 306     |
| <i>E. walkeri</i> , White, pl. liv, figs. 1 and 2 .....                            | 307     |
| <i>E. winchelli</i> , White, pl. lv, figs. 6 and 7; pl. lvi, figs. 1 and 2 .....   | 307     |
| LARAMIE GROUP.                                                                     |         |
| <i>Ostrea</i> Linnaeus.                                                            |         |
| <i>O. glabra</i> , M. & H., pls. lviii, lix, lx, lxi .....                         | 307-308 |
| <i>O. subtrigonalis</i> , Evans & Shumard, pl. lxi, figs. 4-7 .....                | 308     |

124.

WHITE, C. A. [Review of] E. O. Ulrich. Description of two new species of Crinoids. (Journ. Cincinnati Soc. Nat. History, vol. v, No. 3, p. 118, pl. v.) <Neues Jahrbuch für Mineralogie, Geologie und Paläontologie. 2. Band, p. 118. Stuttgart, 1883.

125.

WHITE, C. A. [Review of] P. de Loriol. Description of a new species of Bourguetocrinus. (Journ. Cincinnati Soc. Nat. History, vol. v, No. 3, p. 118, pl. v.) <Neues Jahrbuch für Mineralogie, Geologie und Paläontologie. 2. Band, p. 118. Stuttgart, 1883.

126.

WHITE, C. A. [Review of] S. A. Miller. Description of three new orders and four new families in the class Echinodermata, and eight new species from the Silurian and Devonian formations. (Journ. Cincinnati Soc. Nat. History, vol. v, No. 4, pp. 221-231, pl. ix.) <Neues Jahrbuch für Mineralogie, Geologie und Paläontologie. 2. Band, p. 117. Stuttgart, 1883.

127.

WHITE, C. A. [Review of] S. A. Miller. Description of three new species and remarks upon others. (Journ. Cincinnati Soc. Nat. History, vol. v, No. 3, pp. 116-117, pl. v.) <Neues Jahrbuch für Mineralogie, Geologie und Paläontologie. 2. Band, p. 98. Stuttgart, 1883.

128.

WHITE, C. A. [Review of] C. Schlumberger. Remarks upon a species of Cristellaria. (Journ. Cincinnati Soc. Nat. History, vol. v, No. 3, p. 119, pl. v.) <Neues Jahrbuch für Mineralogie, Geologie und Paläontologie. 2. Band, p. 409. Stuttgart, 1883.

129.

WHITE, C. A. [Review of] vol. 3, Supplement. Geology. U. S. Geographical Survey West of the one hundredth Meridian. <Neues Jahrbuch für Mineralogie, Geologie und Paläontologie. 1. Band, pp. 232-233. Stuttgart, 1883.

130.

WHITE, C. A. [Review of] Geology of Wisconsin. Final reports of the State Geological Survey. 4 volumes, royal 8vo. Published under the direction of the Chief Geologist by the Commissioners of Public Printing. <Neues Jahrbuch für Mineralogie, Geologie und Paläontologie. 2. Band, pp. 341-349. Stuttgart, 1883.

131.

WHITE, C. A. [Review of] Clarence E. Dutton, Captain of Ordnance, U. S. Army. The Tertiary History of the Grand Cañon District. 4to, pp. i-xiv and 1-264; pls. i-xlii, with folio atlas containing 23 plates. Washington: Government Printing Office. 1882. <Neues Jahrbuch für Mineralogie, Geologie und Paläontologie. 2. Band, pp. 190-191. Stuttgart, 1883.

132.

WHITE, C. A. [Review of] John Collett. Department of Geology and Natural History. (Eleventh Annual Report, 1881, Indianapolis, 1882. 8vo, pp. 414, pls. iv, and three small maps.) <Neues Jahrbuch für Mineralogie, Geologie und Paläontologie. 2. Band, pp. 189-190. Stuttgart, 1883.



133.

WHITE, C. A. [Review of] S. A. Miller. Description of ten new species of fossils. (Journ. Cincinnati Soc. Nat. Hist., vol. v, No. 2, pp. 79-88, pls. iii-iv.) <Neues Jahrbuch für Mineralogie, Geologie und Paläontologie. 2. Band, p. 98. Stuttgart, 1883.

134.

WHITE, C. A. [Review of] S. A. Miller. Description of two new genera and eight new species of fossils from the Hudson River Group, with remarks upon others. (Journ. Cincinnati Soc. Nat. Hist., vol. v, No. 1, pp. 34-44, pls. i and ii.) <Neues Jahrbuch für Mineralogie, Geologie und Paläontologie. 2. Band, pp. 97-98. Stuttgart, 1883.

135.

WHITE, C. A. [Annual report to the director of the National Museum.] <Report of the Assistant Director of the U. S. National Museum, G. Brown Goode, for the year 1882. pp. 31-32. Washington, 1883.

A portion of Dr. White's statements and recommendations are quoted.

136.

WHITE, C. A. On the *Macrocheilus* of Phillips, *Plectostylus* of Conrad, and *Soleniscus* of Meek & Worthen. <Proc. U. S. National Museum, vol. vi, pp. 184-187, pl. viii. Washington, 1884.

Same. Washington: Government Printing Office, 1884, 8vo, pp. 184-187, pl. viii. One hundred and fifty separates printed without title-page, covers, or repaging.

Many of the Carboniferous species which have hitherto been referred by authors to *Macrocheilus* are herein referred to *Soleniscus*.

|                                                                                                        | Page. |
|--------------------------------------------------------------------------------------------------------|-------|
| <i>Soleniscus</i> ? ( <i>Macrocheilus</i> ) <i>ponderosus</i> , Swallow f pl. viii, figs. 1 and 2..... | 187   |
| <i>Soleniscus</i> ? ( <i>Macrocheilus</i> ) <i>primigenius</i> , Conrad, pl. viii, fig. 3.....         | 187   |
| <i>Soleniscus</i> ( <i>Macrocheilus</i> ) <i>fusiformis</i> , Hall, pl. viii, figs. 4-6.....           | 187   |
| <i>Soleniscus</i> ( <i>Macrocheilus</i> ) <i>newberryi</i> , Hall, pl. viii, figs. 7 and 8.....        | 187   |
| <i>Soleniscus planus</i> , White, pl. viii, figs. 9, 10.....                                           | 187   |
| <i>Soleniscus</i> ( <i>Macrocheilus</i> ) <i>ventricosus</i> , Hall, pl. viii, figs. 11 and 12.....    | 187   |
| <i>Soleniscus</i> ( <i>Macrocheilus</i> ) <i>texanus</i> , Shumard, pl. viii, figs. 13 and 14.....     | 187   |
| <i>Soleniscus</i> ? ( <i>Macrocheilus</i> ) <i>mediakis</i> M. & W., pl. viii, figs. 15 and 16.....    | 187   |
| <i>Soleniscus</i> ( <i>Macrocheilus</i> ) <i>paludinae formis</i> , Hall, pl. viii, fig. 17.....       | 187   |
| <i>Soleniscus typicus</i> , M. & W., pl. viii, figs. 18 and 19.....                                    | 187   |

137

WHITE, C. A. On the character and function of the epiglottis in the Bull-snake (*Pityophis*). <Amer. Nat., vol. xviii, pp. 19-21. Philadelphia, 1884.

Same. Philadelphia, 1884, 8vo, pp. 19-21. Fifty separates, printed without title-page, covers, or repaging.

It is shown that the hoarse hiss of this snake is produced by the fluttering of the thin erect epiglottis in the current of air expelled from the rima glottidis.

138.

WHITE, C. A. The permanence of the domestic instinct in the cat. <Amer. Nat., vol. xviii, pp. 213-214. Philadelphia, 1884.

Same. Philadelphia, 1884, 8vo, pp. 213-214. Fifty separates printed without title-page, covers, or repaging.

A story of a cat which had spent a year alone in the wilderness of the Upper Missouri.

## 139.

WHITE, C. A. Glacial drift in Montana and Dakota. <Amer. Jour. Sci. 3d ser., vol. xxvii, pp. 112-113. New Haven, 1884.

Same. New Haven, 1884, 8vo 3d ser., vol. xxvii, pp. 112-113. Twenty separates printed without title-page, covers, or repaging.

The presence of true northern glacial drift is observed along the Upper Missouri River, from the Great Falls to Bismarck.

## 140.

WHITE, C. A. Description of certain aberrant forms of the Chamidæ from the Cretaceous rocks of Texas. <Bull. of the U. S. Geol. Surv. No. 4. On Mesozoic fossils. pp. 5 (93)-9 (94), pls. i-v. Washington, 1884.

|                                                                                         | Page |
|-----------------------------------------------------------------------------------------|------|
| <i>Requienia</i> , Matheron .....                                                       | 6    |
| <i>R. patagiata</i> , n. s., White, 1884, pl. i, figs. 1-8, and pl. ii, figs. 1-4 ..... | 6-7  |
| <i>R. texana</i> , Roemer, 1852, pl. ii, figs. 5-7 .....                                | 7    |
| <i>Monopleura</i> , Matheron .....                                                      | 8    |
| <i>M. marcida</i> , n. s., White, 1884, pls. iii and iv .....                           | 8    |
| <i>M. pinguiscula</i> , n. s., White, 1884, pl. v .....                                 | 8-9  |

## 141.

WHITE, C. A. On a small collection of Mesozoic fossils, obtained in Alaska by Mr. W. H. Dall, of the United States Coast Survey. <Bull. of the U. S. Geol. Surv. No. 4. On Mesozoic fossils. pp. 10 (98)-15 (103), pl. vi. Washington, 1884.

|                                                                            | Page  |
|----------------------------------------------------------------------------|-------|
| <i>Mollusca</i> .                                                          |       |
| <i>Aucella</i> , Keyserling .....                                          | 13    |
| <i>A. concentrica</i> , Fischer var. White, 1884, pl. vi, figs. 2-12 ..... | 13-14 |
| <i>Cyprina</i> , Lamarek .....                                             | 14    |
| <i>C. dallii</i> , n. s., White, 1884, pl. vi, fig. 1 .....                | 14    |
| <i>Belemnites</i> , Lamarek .....                                          | 14    |
| <i>B. macratia</i> , n. s., White, 1884, pl. vi, figs. 13-14 .....         | 14-15 |

## 142.

WHITE, C. A. On the Nautiloid genus *Enclimatoceras* Hyatt, and a description of the type species. <Bull. of the U. S. Geol. Surv. No. 4. On Mesozoic fossils. pp. 16 (104)-17 (105), pls. vii-ix. Washington, 1884.

|                                                                                 | Page  |
|---------------------------------------------------------------------------------|-------|
| <i>Enclimatoceras</i> , n. g., Hyatt, 1884 .....                                | 16-17 |
| <i>E. (Nautilus) ulrichi</i> , n. s., White, 1884, pls. vii, viii, and ix ..... | 17    |

## 143.

WHITE, C. A. On the adaptability of the prairies for artificial forestry. <Science, 4<sup>o</sup>, vol. iii, pp. 438-443. Cambridge, 1884.

The view is held that the prairie soil is well adapted to the growth of forest trees; and that the prairies are such only because their occupation by forests has not been accomplished by the natural distribution of trees; also that such distribution has long been retarded by prairie fires.

## 144.

WHITE, C. A. Enemies and parasites of the oyster, past and present. <Science, 4<sup>to</sup>, vol. iii, p. 618. Cambridge, 1884.

It is shown that *Cliona* or a similar burrowing sponge infested certain *Brachiopod* shells as early as the Devonian, and that they were as common upon the fossil *Outreidae* as upon the living. Also that remains of star fishes are rarely found with fossil *Outreidae*, although they are so common an enemy to living oysters.

145.

E, C. A. Certain phenomena in the geological history of the North American Continent, biologically considered. <Proceedings of the Washington Biological Society. vol. ii, pp. 41-66. Washington, 1884.

One hundred separates printed with paper covers, title-page, and repaging.

Address as retiring president of the Biological Society of Washington.

146.

E, C. A. Fossils of the Indiana rocks, No. 3. <Indiana, Department of Geology and Natural History. Thirteenth annual report, John Collett, State geologist. pp. 105-180, pls. xxiii-xxxix. Indianapolis, 1884.

This paper contains some elementary remarks and description of three new species, but it is mainly devoted to the republication of well-known forms.

Indianapolis, 1884, pp. —. Fifteen separates printed.

FAUNA OF THE COAL-MEASURES.

| Description of species.                                                                  |  | Page.   |
|------------------------------------------------------------------------------------------|--|---------|
| <i>Protozoa.</i>                                                                         |  |         |
| <i>Foraminifera.</i>                                                                     |  |         |
| <i>Fusulina</i> , Fischer .....                                                          |  | 116     |
| <i>F. cylindrica</i> , Fischer, pl. xxiii, figs. 1-3 .....                               |  | 116-117 |
| <i>Coelenterata.</i>                                                                     |  |         |
| <i>Polypi.</i>                                                                           |  |         |
| <i>Zaphrentis</i> , Rafinesque .....                                                     |  | 117     |
| <i>Z. gibsoni</i> , n. s., White, 1884, pl. xxiii, figs. 4 and 5 .....                   |  | 117-118 |
| <i>Lophophyllum</i> , Edwards & Halmé .....                                              |  | 118     |
| <i>L. proliferum</i> , McChesney, pl. xxiii, figs. 6 and 7 .....                         |  | 118     |
| <i>Azophyllum</i> , Edwards & Halmé .....                                                |  | 118     |
| <i>A. rudis</i> , White & St. John, 1867, pl. xxiii, figs. 8 and 9 .....                 |  | 118-119 |
| <i>Campophyllum</i> , Edwards & Halmé .....                                              |  | 119     |
| <i>C. torquim</i> , Owen, 1852, pl. xxiii, figs. 10-13 .....                             |  | 119     |
| <i>Michelinia</i> , de Koninck .....                                                     |  | 119     |
| <i>M. eugeneae</i> , n. s., White, 1884, pl. xxiii, figs. 14-16 .....                    |  | 119-120 |
| <i>Brachiopoda.</i>                                                                      |  |         |
| <i>Lingula</i> , Bruguière .....                                                         |  | 120     |
| <i>L. umbonata</i> , Cox, 1857, pl. xxv, fig. 14 .....                                   |  | 120     |
| <i>Discina</i> , Lamarek .....                                                           |  | 121     |
| <i>D. nitida</i> , Phillips, pl. xxv, fig. 10 .....                                      |  | 121     |
| <i>D. convexa</i> , Shumard, 1858, pl. xxv, fig. 9 .....                                 |  | 121     |
| <i>Crania</i> , Retzius .....                                                            |  | 121     |
| <i>C. modesta</i> , White & St. John, 1867, pl. xxv, fig. 9, and pl. xxxvi, fig. 5 ..... |  | 121-122 |
| <i>Productus</i> , Sowerby .....                                                         |  | 122     |
| <i>P. nebrascensis</i> , Owen, 1852, pl. xxiv, figs. 7-9 .....                           |  | 122-123 |
| <i>P. symmetricus</i> , McChesney, 1866, pl. xxv, figs. 1 and 2 .....                    |  | 123     |
| <i>P. punctatus</i> , Martin, pl. xxvii, figs. 1-3 .....                                 |  | 124     |
| <i>P. costatus</i> , Sowerby, pl. xxiv, figs. 4-6, and pl. xxv, figs. 3-5 .....          |  | 124-125 |
| <i>P. semireticulatus</i> , Martin, pl. xxiv, figs. 1-3 .....                            |  | 125-126 |
| <i>P. cora</i> , d'Orbigny, pl. xxvi, figs. 1-3 .....                                    |  | 126-127 |
| <i>P. longispinus</i> , Sowerby, pl. xxiv, figs. 10 and 11 .....                         |  | 127-128 |
| <i>Chonetes</i> , Fischer .....                                                          |  | 128     |
| <i>C. verneuilliana</i> , Norwood & Pratten, 1854, pl. xxv, figs. 7 and 8 .....          |  | 128     |
| <i>Orthis</i> , Dalman .....                                                             |  | 129     |
| <i>O. pectos</i> , Marcou, 1858, pl. xxvii, figs. 20-22 .....                            |  | 129     |
| <i>Hemipronites</i> , Pander .....                                                       |  | 129     |
| <i>Streptorhynchus</i> , King .....                                                      |  | 129     |
| <i>Hemipronites crassus</i> , M. & H., pl. xxvi, figs. 4-11 .....                        |  | 129-130 |
| <i>Meekella</i> , White & St. John .....                                                 |  | 130     |
| <i>M. striatocostata</i> , Cox, 1857, pl. xxvi, figs. 12-14 .....                        |  | 130-131 |
| <i>Syntrielasma</i> , M. & W. .....                                                      |  | 131     |
| <i>S. hemiplicata</i> , Hall, 1852, pl. xxvi, figs. 15-18 .....                          |  | 131-132 |
| <i>Rhynchonella</i> , Fischer .....                                                      |  | 132     |
| <i>R. uta</i> , Marcou, 1858, pl. xxv, fig. 6 .....                                      |  | 132     |



|                                                                                                 | Page    |
|-------------------------------------------------------------------------------------------------|---------|
| <i>Spirifer</i> , Sowerby.....                                                                  | 132     |
| <i>S. cameratus</i> , Morton, 1836, pl. xxxv, figs. 3-5.....                                    | 132-133 |
| <i>S. (Martinia) lineatus</i> , Martin, pl. xxvii, figs. 4-6.....                               | 133-134 |
| <i>S. (Martinia) planoconvexa</i> , Shumard, 1855, pl. xxxii, figs. 23 and 24.....              | 134-135 |
| <i>Spiriferina</i> , d'Orbigny.....                                                             | 135     |
| <i>S. kentuckensis</i> , Shumard, 1855, pl. xxxv, figs. 13 and 14.....                          | 135     |
| <i>Athyris</i> , McCoy.....                                                                     | 136     |
| <i>A. subtilita</i> , Hall, pl. xxxv, figs. 6-9.....                                            | 136     |
| <i>Retzia</i> , King.....                                                                       | 136     |
| <i>R. mormonii</i> , Marcou, 1858, pl. xxxv, figs. 10-12.....                                   | 136-137 |
| <i>Terebratula</i> , Lillwyd.....                                                               | 137     |
| <i>T. bovidens</i> , Morton, 1836, pl. xxxii, figs. 17-19.....                                  | 137     |
| <b>Polysa.</b>                                                                                  |         |
| <i>Syncladia</i> , King.....                                                                    | 138     |
| <i>S. biserialis</i> , Swallow, 1858, pl. xxv, figs. 11-13.....                                 | 138     |
| <b>Conchifera.</b>                                                                              |         |
| <i>Lima</i> , Bruguière.....                                                                    | 138     |
| <i>L. retifera</i> , Shumard, 1858, pl. xxviii, fig. 4.....                                     | 138-139 |
| <i>Monopteria</i> , M. & W.....                                                                 | 139     |
| <i>M. gibbosa</i> , M. & W., 1866, pl. xxx, figs. 11 and 12.....                                | 139     |
| <i>Myalina</i> , de Koninck.....                                                                | 140     |
| <i>M. subquadrata</i> , Shumard, 1855, pl. xxix, figs. 1 and 2, and pl. xxx, figs. 1 and 2..... | 140     |
| <i>M. recurvirostris</i> , M. & W., 1866, pl. xxix, figs. 3 and 4.....                          | 140-141 |
| <i>M. I swallovi</i> , McClesney, 1860, pl. xxx, figs. 6-8.....                                 | 141     |
| <i>Entolium</i> , Meek.....                                                                     | 142     |
| <i>E. aviculatum</i> , Swallow, 1858, pl. xxviii, figs. 7 and 8.....                            | 142     |
| <i>Eumicrotis</i> , Meek.....                                                                   | 142     |
| <i>E. havani</i> , M. & H., 1866, pl. xxx, fig. 10.....                                         | 142-143 |
| <i>Aviculopecten</i> , McCoy.....                                                               | 143     |
| <i>A. occidentalis</i> , Shumard, 1855, pl. xxviii, fig. 3.....                                 | 143     |
| <i>A. carboniferus</i> , Stevens, 1858, pl. xxviii, figs. 5 and 6.....                          | 144     |
| <i>A. I interlineatus</i> , M. & W., pl. xxx, fig. 9.....                                       | 145     |
| <i>Pinna</i> , Linnaeus.....                                                                    | 145     |
| <i>P. peracuta</i> , Shumard, 1858, pl. xxviii, figs. 1 and 2.....                              | 145-146 |
| <i>Nuculana</i> , Link.....                                                                     | 146     |
| <i>N. belistriata</i> , Stevens, 1858, pl. xxxi, figs. 8 and 9.....                             | 146     |
| <i>Nucula</i> , Lamarck.....                                                                    | 146     |
| <i>N. ventricosa</i> , Hall, 1858, pl. xxvii, figs. 9 and 10.....                               | 146-147 |
| <i>Schizodus</i> , King.....                                                                    | 147     |
| <i>S. wheeleri</i> , Swallow, 1862, pl. xxx, figs. 3-5.....                                     | 147     |
| <i>Clinopiatha</i> , M. & W.....                                                                | 147     |
| <i>C. radiata</i> , Hall, 1858, pl. xxxi, figs. 6 and 7.....                                    | 147-148 |
| <i>Edmondia</i> , de Koninck.....                                                               | 148     |
| <i>E. aspinwallensis</i> , Meek, 1872, pl. xxxi, figs. 4 and 5.....                             | 148     |
| <i>Allorisma</i> , King.....                                                                    | 148     |
| <i>A. subcuneata</i> , M. & H., 1864, pl. xxxi, figs. 1-3.....                                  | 148-149 |
| <b>Gastropoda.</b>                                                                              |         |
| The genera <i>Macrocheilus</i> and <i>Soleniscus</i> .....                                      | 149-152 |
| <i>Soleniscus</i> , M. & W.....                                                                 | 152     |
| <i>S. typicus</i> , M. & W., 1866, pl. xxxiv, figs. 18, 19.....                                 | 152     |
| <i>S. (Macrocheilus) newberryi</i> , Stevens, 1858, pl. xxxiv, figs. 7 and 8.....               | 153     |
| <i>S. planus</i> , White, 1881, pl. xxxiv, figs. 9 and 10.....                                  | 153-154 |
| <i>S. (Macrocheilus) fusiformis</i> , Hall, 1858, pl. xxxiv, figs. 4-6.....                     | 154     |
| <i>S. (Macrocheilus) paludinaformis</i> , Hall, 1858, pl. xxxiv, fig. 17.....                   | 154-155 |
| <i>S. (Macrocheilus) ventricosus</i> , Hall, 1858, pl. xxxiv, figs. 11 and 12.....              | 155     |
| <i>S. (Macrocheilus) texanus</i> , Shumard 1859, pl. xxxiv, figs. 13 and 14.....                | 155-156 |
| <i>S. (Macrocheilus) medialis</i> , M. & W., 1866, pl. xxxiv, figs. 15 and 16.....              | 156     |
| <i>S. (Macrocheilus) ponderosus</i> , Swallow 1, 1856, pl. xxxiv, figs. 1 and 2.....            | 156     |
| <i>S. (Macrocheilus) primigenius</i> , Conrad, 1835, pl. xxxiv, fig. 3.....                     | 157     |
| <i>Bellerophon</i> , Montfort.....                                                              | 157     |
| <i>B. crassus</i> , M. & W., 1866, pl. xxxiii, figs. 1 and 2.....                               | 157     |
| <i>B. percarinatus</i> , Conrad, 1842, pl. xxxiii, figs. 9-14.....                              | 157     |
| <i>B. carbonarius</i> , Cox, 1857, pl. xxxiii, figs. 6-8.....                                   | 158-159 |
| <i>B. nodocarinatus</i> , Hall, 1858, pl. xxxiii, figs. 3-5.....                                | 159     |
| <i>Platygeras</i> , Conrad.....                                                                 | 159     |



|                                                                                        | Page.   |
|----------------------------------------------------------------------------------------|---------|
| <i>P. nebrascense</i> , Meek, 1872, pl. xxxii, figs. 15 and 16.....                    | 159-160 |
| <i>Pleurotomaria</i> , DeFrance.....                                                   | 160     |
| <i>P. turbiniformis</i> , M. & W., 1866, pl. xxxii, figs. 7 and 8.....                 | 160     |
| <i>P. tabulata</i> , Hall, pl. xxxii, figs. 4 and 5.....                               | 160-161 |
| <i>P. sphaerulata</i> , Courad, 1842, pl. xxxii, figs. 1-3.....                        | 161     |
| <i>Euomphalus</i> , Sowerby.....                                                       | 161     |
| <i>E. rugosus</i> , Hall, 1858, pl. xxxii, figs. 11 and 12.....                        | 161-162 |
| <i>Naticopsis</i> , McCoy.....                                                         | 162     |
| <i>N. nana</i> , M. & W., 1866, pl. xxxvi, figs. 6 and 7.....                          | 162     |
| <i>N. wheeleri</i> , Swallow, 1860, pl. xxxii, figs. 13 and 14.....                    | 162-163 |
| <i>Polyphemopsis</i> , Portlock.....                                                   | 163     |
| <i>P. peracuta</i> , M. & W., pl. xxxii, figs. 9 and 10.....                           | 163     |
| <i>P. nitidula</i> , M. & W., 1866, pl. xxvii, figs. 7 and 8.....                      | 163     |
| <i>Polyphemopsis?</i> — (f) White, 1884, pl. xxxii, fig. 6.....                        | 164     |
| <i>Cephalopoda.</i>                                                                    |         |
| <i>Orthoceras</i> , Breynius.....                                                      | 164     |
| <i>O. rushensis</i> , McChesney, pl. xxxvi, fig. 5.....                                | 164     |
| <i>Nautilus</i> , Breynius.....                                                        | 165     |
| <i>N. winslowi</i> , M. & W., 1873, pl. xxxvi, figs. 1 and 2.....                      | 165     |
| <i>N. forbesianus</i> , McChesney, pl. xxxvi, figs. 3 and 4.....                       | 165     |
| <i>N. missouriensis</i> , Swallow ? 1857, pl. xxxv, figs. 1 and 2.....                 | 166     |
| <i>Crustacea.</i>                                                                      |         |
| <i>Gnathostomata.</i>                                                                  |         |
| <i>Leaia</i> , Jones.....                                                              | 167     |
| <i>L. tricarinata</i> , M. & W., 1868, pl. xxxix, figs. 10-13.....                     | 167-168 |
| <i>Merostomata.</i>                                                                    |         |
| <i>Eurypterus</i> , DeKay.....                                                         | 168     |
| <i>E. (Anthracoctes) mazonensis</i> , M. & W., 1868, pl. xxxvii, figs. 1-3.....        | 168-170 |
| <i>Euproops</i> , M. & W.....                                                          | 170     |
| <i>E. danae</i> , M. & W., 1866, pl. xxxix, fig. 1.....                                | 170-172 |
| <i>E. colletti</i> , n. s., White, 1884, pl. xxxix, fig. 2.....                        | 172     |
| <i>Trilobita.</i>                                                                      |         |
| <i>Phillipsia</i> , Portlock.....                                                      | 173     |
| <i>P. (Griffithides?) scitula</i> , M. & W., 1873, pl. xxxix, figs. 6-9.....           | 173-174 |
| <i>P. (Griffithides?) sangamonensis</i> , M. & W., 1873, pl. xxxix, figs. 4 and 5..... | 174-176 |
| <i>Isopoda.</i>                                                                        |         |
| <i>Acanthotelson</i> , M. & W.....                                                     | 176     |
| <i>A. stimpsoni</i> , M. & W., 1866, pl. xxxvii, figs. 4 and 5.....                    | 176-177 |
| <i>A. eveni</i> , M. & W., 1868, pl. xxxviii, figs. 4-7.....                           | 177-178 |
| <i>Dithyrocaris</i> , Scouler.....                                                     | 178     |
| <i>D. carbonarius</i> , M. & W., 1873, pl. xxxix, fig. 3.....                          | 178     |
| <i>Macroura.</i>                                                                       |         |
| <i>Palaeocaris</i> , M. & W.....                                                       | 179     |
| <i>P. typus</i> , M. & W., pl. xxxviii, figs. 1-3.....                                 | 179-180 |
| <i>Anthrapalæmon</i> , Salter.....                                                     | 180     |
| <i>A. gracilis</i> , M. & W., 1865, pl. xxxviii, figs. 8 and 9.....                    | 180     |

147.

WHITE, C. A. [Review of] Geological Survey of Illinois; A. H. Worthen, Director. Vol. vii, Geology and Paleontology. Springfield. 1883. pp. 1-373; pls. i-xxxii. < Science. 4to. Vol. iii, pp. 332-333. Cambridge, 1884.

148.

WHITE, C. A. Notes on the Jurassic strata of North America. < Amer. Jour. Sci. 3d ser., vol. xxix, pp. 228-232. New Haven, 1885.

A criticism of the views published by Mr. J. F. Whiteaves in Geol. Surv. Canada, Mesozoic Fossils, vol. 1, part ii. Montreal, 1884. The identification of the following species is considered very doubtful:

|                                                                      | Page. |
|----------------------------------------------------------------------|-------|
| <i>Belemnites densus</i> , M. & H.....                               | 229   |
| <i>Lysosoma</i> Powell, White.....                                   | 230   |
| <i>Myacites</i> ( <i>Pleuromya</i> ) <i>subcompressa</i> , Meek..... | 230   |

|                                                                       | Page.   |
|-----------------------------------------------------------------------|---------|
| <i>Astarte Packardii</i> , White .....                                | 230     |
| <i>Arca</i> ( <i>Cucullaea</i> ) <i>inornata</i> , M. & H. ....       | 230     |
| <i>Modiola</i> ( <i>Volsella</i> ) <i>subimbricata</i> , M. & H. .... | 230     |
| <i>Pteria</i> ( <i>Oxytoma</i> ) <i>mucronata</i> , M. & H. ....      | 230     |
| <i>Camptoneoctes extenuatus</i> , M. & H. ....                        | 230-231 |
| <i>Gryphaea nebrascensis</i> , M. & H. ....                           | 231     |

## 149.

WHITE, C. A. The Genus *Pyrgulifera*, Meek, and its Associates and Congeners. <Amer. Jour. Sci., 3d ser., vol. xxix, pp. 277-280. New Haven, 1885.

A summary of the occurrence, fossil and recent, of the genus *Pyrgulifera*.

## 150.

WHITE, C. A. On Marine Eocene, Fresh-water Miocene, and other Fossil Mollusca of Western North America. <Bull. U. S. Geol. Surv., No. 18, pp. 1-19, pls. 1-iii. Washington, 1885.

This paper is divided into three parts, the first on "The occurrence of *Cardita planicosta*, Lamarck, in Western Oregon," pl. i, pp. 7-9.

The second on "Fossil Mollusca, from the John Day group in Eastern Oregon," pp. 10-16.

The following new species are described:

|                                                                                               | Page. |
|-----------------------------------------------------------------------------------------------|-------|
| <i>Unio condoni</i> , n. s., White, 1885, pl. ii, figs. 1-3 .....                             | 13-14 |
| <i>Helicidae</i> .....                                                                        | 14    |
| <i>Helix</i> ( <i>Aglaia</i> ) <i>fidelis</i> , Gray, pl. iii, figs. 1-3 .....                | 14    |
| <i>Helix</i> ( <i>Patula</i> ) <i>perspectiva</i> , Say, pl. iii, fig. 7 .....                | 14    |
| <i>Helix</i> ( <i>Monodon</i> ?) <i>dallii</i> , Stearns, MS., 1885, pl. iii, figs. 4-6 ..... | 14-15 |
| <i>Gonostoma yatesii</i> , Cooper, pl. iii, figs. 8-12 .....                                  | 16    |

The third part contains "Supplementary notes on the non-marine fossil mollusca of North America.

|                                      | Page. |
|--------------------------------------|-------|
| <i>Ampullaria powelli</i> .....      | 18    |
| <i>Cerithidea nebrascensis</i> ..... | 19    |
| <i>Dreissena leucophaea</i> .....    | 19    |
| <i>Physa prisca</i> .....            | 18    |
| <i>Unio martini</i> .....            | 18    |
| <i>Zoptychius carbonaria</i> .....   | 18    |

## 151.

WHITE, C. A. On new Cretaceous Fossils from California. <Bull. U. S. Geol. Surv., No. 22, pp. 1 (349);-15 (361), pls. i-v. Washington, 1885.

|                                                                               | Page. |
|-------------------------------------------------------------------------------|-------|
| <i>Chamidae</i> .                                                             |       |
| <i>Coralliochama</i> , n. g., White, 1885 .....                               | 9-10  |
| <i>C. oreutti</i> , n. s., White, 1885, pls. i-iv .....                       | 10-12 |
| <i>Trochidae</i> .                                                            |       |
| <i>Trochus</i> , Linnaeus .....                                               | 12    |
| Subgenus <i>Oxytele</i> , Philippi .....                                      | 12    |
| <i>T. (Oxytele) euryostomus</i> , n. s., White, 1885, pl. v, figs. 9-11 ..... | 12    |
| <i>Neritidae</i> .                                                            |       |
| <i>Nerita</i> , Linnaeus .....                                                | 12    |
| <i>Nerita</i> , ——— ? White, 1885 .....                                       | 12    |
| <i>Cerithiidae</i> .                                                          |       |
| <i>Cerithium</i> , Bruguière .....                                            | 13    |
| <i>C. pillingeri</i> , n. s., White, 1885, pl. v, figs. 3-6 .....             | 13    |
| <i>C. totium sanctorum</i> , n. s., White, 1885, pl. v, figs. 12 and 13 ..... | 13    |
| <i>Solaridae</i> .                                                            |       |
| <i>Solarium</i> , Lamarck .....                                               | 14    |
| <i>S. wallatense</i> , n. s., White, 1885, pl. v, figs. 1 and 2 .....         | 14    |



Besides the foregoing, Dr. White has in press an important work on the Cretaceous invertebrates of Brazil, which were collected by the Imperial Geological Commission under the direction of the late Prof. Ch. Fred. Hartt. The work is in process of publication at Rio de Janeiro by the Brazilian National Museum. It is to appear in Volume VII of the "Archives" of that museum, in both the Portuguese and English languages, and will be illustrated with 28 lithographic plates of figures.

The work consists of five parts, which are as follows in the original Portuguese edition—

Contribuições para a Palæontologia do Brazil:

- No. 1. Conchiferos Cretaceos.
- No. 2. Gasteropodes Cretaceos.
- No. 3. Cephalopodes Cretaceos.
- No. 4. Molluscos Cretaceos de Água doce do Grupo da Bahia.
- No. 5. Echinodermes Cretaceos.

Two hundred and fourteen species in all are published and figured in this work, of which 116 species are diagnosed as new. Four new genera are proposed, three of gasteropoda and one of echinoids. The former are *Orvillia*, *Cylindritella*, and *Cypræactæon*. The latter is *Heteropoda*, the generic diagnosis of which was furnished to the author by Prof. P. de Loriol, of Geneva.

•

• •

•

•



---

## PART III.

---

THE PUBLISHED WRITINGS OF CHARLES DOOLITTLE WALCOTT.

---

1

### III.—PUBLISHED WRITINGS OF CHARLES DOOLITTLE WALCOTT.

#### 1.

WALCOTT, C. D. Description of a New Species of Trilobite. <Cincinnati Quarterly Journal of Science, vol. ii, pp. 273-274, figs. 18 a, b. July. Cincinnati, 1875.

Page.

*Spheroecoryphe*, Angelin.

*S. robustus*, n. s., Walcott, 1875, p. 274, figs. 18 a, b..... 273-274

#### 2.

WALCOTT, C. D. New Species of Trilobite from the Trenton Limestone at Trenton Falls, N. Y. <Cincinnati Quarterly Journal of Science, vol. ii, pp. 347-349, fig. 27. October. Cincinnati, 1875.

Page.

*Remopleurides*, Portlock.

*R. striatulus*, n. s., Walcott, 1875, fig. 27 a, b, and A..... 347-349

#### 3.

WALCOTT, C. D. Notes on *Ceraurus pleurexanthemus*, Green. <Annals Lyc. Nat. Hist. N. Y., vol. xi, pp. 155-162, pl. xi. November. New York, 1875.

#### 4.

WALCOTT, C. D. Preliminary Notice of the Discovery of the Remains of the Natatory and Branchial appendages of Trilobites. <28th Regent's Report N. Y. State Mus. Nat. Hist., pp. 89-92. 1877. Albany, 1879.

#### 5.

WALCOTT, C. D. Descriptions of New Species of Fossils from the Trenton limestone. <28th Regent's Report N. Y. State Mus. Nat. Hist., pp. 93-97. 1877. Albany, 1879.

Page.

|                                                      |       |
|------------------------------------------------------|-------|
| <i>Conularia</i> , Miller, MS., 1818.....            | 93    |
| <i>C. quadrata</i> , n. s., Walcott, 1877.....       | 93    |
| * <i>Conchopeltis</i> , n. g., Walcott, 1877.....    | 93    |
| <i>C. alternata</i> , n. s., Walcott, 1877.....      | 93-94 |
| <i>C. minnesotensis</i> , n. s., Walcott, 1877.....  | 94    |
| <i>Bathyurus</i> , Billings.....                     | 94    |
| <i>B. longispinus</i> , n. s., Walcott, 1877.....    | 94-96 |
| <i>Asaphus</i> , Brongniart, 1822.....               | 96    |
| <i>A. romingeri</i> , n. s., Walcott, 1877.....      | 96-97 |
| <i>A. wisconsinensis</i> , n. s., Walcott, 1877..... | 97    |

#### 6.

WALCOTT, C. D. Notes on some Sections of Trilobites from the Trenton limestone, [and] Note upon the Legs of Trilobites. <31st Regent's Report N. Y. State Mus. Nat. Hist., pp. 61-65, pl. i. Albany, 1879.

Published in advance, September 20, 1877, pp. 1-17, pl. i.

Extracts from the 31st Regent's report, published in March, 1879.

\* κογχη, shell; πειλη, shield.

## 7.

WALCOTT, C. D. Note upon the Eggs of the Trilobite. <31st Regent's Report N. Y. State Mus. Nat. Hist., pp. 66-67? Albany, 1879.

Published in advance, September 20, 1877, pp. 11-13.

Extracts from the 31st Regent's report, published in March, 1879.

## 8.

WALCOTT, C. D. Descriptions of New Species of Fossils from the Chazy and Trenton limestones. <31st Regent's Report N. Y. State Mus. Nat. Hist., pp. 68-71. Albany, 1879.

Published in advance, September 20, 1877, pp. 15-21.

Extract from the 31st Regent's report, published in March, 1879.

|                                                      | Page         |
|------------------------------------------------------|--------------|
| <i>Arionellus</i> , Barrande, 1846.....              | 15, 68       |
| <i>A. pustulatus</i> , n. s., Walcott, 1877.....     | 15, 68       |
| <i>Ovovirus</i> , Green, 1832.....                   | 15, 68       |
| <i>O. rarus</i> , n. s., Walcott, 1877.....          | 15-16, 68    |
| <i>Encrinurus</i> , Emmerich, 1845.....              | 15, 68       |
| <i>E. trentonensis</i> , n. s., Walcott, 1877.....   | 15, 68       |
| <i>E. varicosatus</i> , n. s., Walcott, 1877.....    | 15, 68       |
| <i>Acidaspis</i> , Murchison, 1839.....              | 15, 68       |
| <i>A. parvula</i> , n. s., Walcott, 1877.....        | 15, 17, 68   |
| <i>Dalmanites</i> , Barrande, 1852.....              | 17, 68       |
| <i>D. intermedius</i> , n. s., Walcott, 1877.....    | 17-18, 68-70 |
| <i>Ilanus</i> , Dalman, 1826.....                    | 19, 70       |
| <i>I. indeterminatus</i> , n. s., Walcott, 1877..... | 19-20, 70-71 |
| <i>I. milleri</i> , Billings.....                    | 20, 71       |
| <i>Asaphus</i> , Brongniart, 1822.....               | 20, 71       |
| <i>A. homalonotoides</i> , n. s., Walcott, 1877..... | 20-21, 71    |

## 9.

WALCOTT, C. D. Descriptions of New Species of Fossils from the Calciferous formation. <32d Regent's Report N. Y. State Mus. Nat. Hist., pp. —. Albany.

Published in advance, January 3, 1879, pp. 1-4.

|                                                    | Page |
|----------------------------------------------------|------|
| <i>Platyceras</i> , Conrad, 1840.....              | 1    |
| <i>P. minutissimum</i> , n. s., Walcott, 1879..... | 1    |
| <i>Metoptoma</i> , Phillips, 1838.....             | 1    |
| <i>M. cornutaforme</i> , n. s., Walcott, 1879..... | 1    |
| <i>Oncocephalites</i> , Adams, 1848.....           | 1    |
| <i>O. calciferus</i> , n. s., Walcott, 1879.....   | 1, 3 |
| <i>O. harti</i> , n. s., Walcott, 1879.....        | 2, 3 |
| <i>Ptychaspis</i> , Hall, 1863.....                | 3    |
| <i>P. speciosus</i> , n. s., Walcott, 1879.....    | 3    |
| <i>Bathyurus armatus</i> , Billings.....           | 3, 4 |

## 10.

WALCOTT, C. D. The Utica slate and Related formations. Fossils of the Utica slate and Metamorphoses of Triarthrus Becki. <Trans. Albany Institute, vol. x, pp. 1-38, pls. i-ii. Albany, 1879.

Published in advance, June, 1879.

|                                                                             | Page |
|-----------------------------------------------------------------------------|------|
| * <i>Oyathophycus</i> , n. g., Walcott, 1879.....                           | 18   |
| <i>O. reticulatus</i> , n. s., Walcott, 1879, pl. ii, figs. 16, 16 a-d..... | 19   |
| <i>O. subephericus</i> , n. s., Walcott, 1879, pl. ii, fig. 17.....         | 19   |
| † <i>Discophycus</i> , n. g., Walcott, 1879.....                            | 19   |
| <i>D. typicalis</i> , n. s., Walcott, 1879, pl. ii, figs. 18, 18a.....      | 19   |

\* *Κοδσος*, a cup; *φύκος*, a weed.

† *Δισκος*, a disk; *φύκος*, a sea-weed.



|                                                                               | Page. |
|-------------------------------------------------------------------------------|-------|
| <i>Graptolithus</i> , Linnaeus, 1736 .....                                    | 20    |
| <i>G. annectans</i> , n. s., Walcott, 1879 .....                              | 20    |
| <i>Dendrograptus</i> , Hall, 1865 .....                                       | 20    |
| <i>D. simplex</i> , n. s., Walcott, 1879, pl. 1, figs. 5, 5 a, b, and 6 ..... | 20    |
| <i>D. tenuiramosus</i> , n. s., Walcott, 1879, pl. 1, fig. 4 .....            | 21    |
| <i>D. compactus</i> , n. s., Walcott, 1879, pl. 1, fig. 1 .....               | 21    |
| <i>Sagenella</i> , Hall, 1852 .....                                           | 22    |
| <i>S. ambigua</i> , n. s., Walcott, 1879, pl. 1, figs. 3, 3 a .....           | 22    |
| <i>Modiolopsis</i> , Hall, 1847 .....                                         | 22    |
| <i>M. cancellata</i> , n. s., Walcott, 1879, pl. 1, figs. 8, 8 a .....        | 22    |
| <i>Orthoceras</i> , Breynius, 1732 .....                                      | 22    |
| <i>O. onidaense</i> , n. s., Walcott, 1879, pl. 1, figs. 7, 7 a .....         | 22-23 |
| <i>Beurichia cincinnatensis</i> , Miller .....                                | 23    |
| <i>Triarthrus becki</i> , Green, 1832 .....                                   | 23-24 |
| Metamorphoses of <i>Triarthrus becki</i> .....                                | 24-26 |
| Degree of development .....                                                   | 26-29 |
| Periods of development .....                                                  | 29-30 |
| Comparison of parts during development .....                                  | 30-31 |
| Table of development .....                                                    | 31-32 |
| Ornamentation .....                                                           | 32-33 |
| Catalogue of fossils occurring in the Utica slate .....                       | 34-38 |

11.

WALCOTT, C. D. The Permian and other Paleozoic Groups of the Kanab Valley, Arizona. < Amer. Jour. Sci., 3d ser., vol. xx, pp. 221-225. September. New Haven, 1880.

12.

WALCOTT, C. D. The Trilobite: New and Old Evidence Relating to its Organization, < Bull. Mus. Comp. Zool., at Harvard College, vol. viii, No. 10, pp. 191-224, pls. i-vi. March. Cambridge, 1881.

13.

WALCOTT, C. D. On the nature of Cyathophycus. < Amer. Jour. Sci., 3d ser., vol. xxii, pp. 394-395. November. New Haven, 1881.

14.

WALCOTT, C. D. Description of a New Genus of the The Order Euripterida from the Utica slate. < Amer. Jour. Sci., 3d ser., vol. xxiii, pp. 213-216. March. New Haven, 1882.

|                                                                             | Page.   |
|-----------------------------------------------------------------------------|---------|
| <i>Echinognathus</i> , n. g., Walcott, 1882 .....                           |         |
| <i>E. clevelandi</i> , n. s., Walcott, fig. 1, p. 213; fig. 2, p. 214 ..... | 212-216 |

15.

WALCOTT, C. D. Injury sustained by the Eye of a Trilobite at the time of Moulting of the shell. < Amer. Jour. Sci., 3d ser., vol. xxvi, p. 302. October. New Haven, 1883.

16.

WALCOTT, C. D. Descriptions of new species of Fossils from the Trenton group of New York. < 35th Regents Rep., N. Y. State Mus. Nat. Hist., pp. 207-214, pl. xvii. Albany, 1884.

Published in advance. October 15, 1883, pp. 1-8, pl. xvii.

|                                                                       | Page.        |
|-----------------------------------------------------------------------|--------------|
| <i>Glyptocrinus</i> , Hall .....                                      | 1, 207       |
| <i>G. argutus</i> , n. s., Walcott, 1883, pl. xvii, fig. 9 .....      | 1, 207       |
| <i>G. ? subnodosus</i> , n. s., Walcott, 1883, pl. xvii, fig. 3 ..... | 2, 208       |
| <i>Meroocrinus</i> , n. g., Walcott, 1883 .....                       | 2-3, 208-209 |
| <i>M. typus</i> , n. s., Walcott, 1883, pl. xvii, fig. 5 .....        | 3, 209       |

## 7.

WALCOTT, C. D. Note upon the Eggs of the Trilobite. <31st Regent's Report N. Y. State Mus. Nat. Hist., pp. 66-67? Albany, 1879.

Published in advance, September 20, 1877, pp. 11-13.

Extracts from the 31st Regent's report, published in March, 1879.

## 8.

WALCOTT, C. D. Descriptions of New Species of Fossils from the Chazy and Trenton limestones. <31st Regent's Report N. Y. State Mus. Nat. Hist., pp. 68-71. Albany, 1879.

Published in advance, September 20, 1877, pp. 15-21.

Extract from the 31st Regent's report, published in March, 1879.

|                                                      | Page.        |
|------------------------------------------------------|--------------|
| <i>Arionellus</i> , Barrande, 1846.....              | 15, 68       |
| <i>A. pustulatus</i> , n. s., Walcott, 1877.....     | 15, 68       |
| <i>Ceraurus</i> , Green, 1832.....                   | 15, 68       |
| <i>C. rarus</i> , n. s., Walcott, 1877.....          | 15-16, 68    |
| <i>Encrinurus</i> , Emmerich, 1845.....              | 16, 68       |
| <i>E. trentonensis</i> , n. s., Walcott, 1877.....   | 16, 68       |
| <i>E. varicosatus</i> , n. s., Walcott, 1877.....    | 16, 68       |
| <i>Acidaspis</i> , Murchison, 1839.....              | 16, 68       |
| <i>A. parvula</i> , n. s., Walcott, 1877.....        | 16, 17, 68   |
| <i>Dalmanites</i> , Barrande, 1852.....              | 17, 68       |
| <i>D. intermedius</i> , n. s., Walcott, 1877.....    | 17-18, 69-70 |
| <i>Ilænus</i> , Dalman, 1826.....                    | 19, 70       |
| <i>I. indeterminatus</i> , n. s., Walcott, 1877..... | 19-20, 70-71 |
| <i>I. mülleri</i> , Billings.....                    | 20, 71       |
| <i>Asaphus</i> , Brongniart, 1822.....               | 20, 71       |
| <i>A. homalonotoides</i> , n. s., Walcott, 1877..... | 20-21, 71    |

## 9.

WALCOTT, C. D. Descriptions of New Species of Fossils from the Calciferous formation. <32d Regent's Report N. Y. State Mus. Nat. Hist., pp. —. Albany.

Published in advance, January 3, 1879, pp. 1-4.

|                                                    | Page. |
|----------------------------------------------------|-------|
| <i>Platyceras</i> , Conrad, 1840.....              | 1     |
| <i>P. minutissimum</i> , n. s., Walcott, 1879..... | 1     |
| <i>Metoptoma</i> , Phillips, 1836.....             | 1     |
| <i>M. cornutaforme</i> , n. s., Walcott, 1879..... | 1     |
| <i>Conocephalites</i> , Adams, 1848.....           | 1     |
| <i>C. calciferus</i> , n. s., Walcott, 1879.....   | 1, 2  |
| <i>C. harti</i> , n. s., Walcott, 1879.....        | 2, 3  |
| <i>Ptychaspis</i> , Hall, 1863.....                | 3     |
| <i>P. speciosus</i> , n. s., Walcott, 1879.....    | 3     |
| <i>Bathyrurus armatus</i> , Billings.....          | 3, 4  |

## 10.

WALCOTT, C. D. The Utica slate and Related formations. Fossils of the Utica slate and Metamorphoses of Triarthrus Becki. <Trans. Albany Institute, vol. x, pp. 1-38, pls. i-ii. Albany, 1879.

Published in advance, June, 1879.

|                                                                             | Page. |
|-----------------------------------------------------------------------------|-------|
| * <i>Cyathophycus</i> , n. g., Walcott, 1879.....                           | 18    |
| <i>C. reticulatus</i> , n. s., Walcott, 1879, pl. ii, figs. 16, 16 a-d..... | 19    |
| <i>C. subaphericus</i> , n. s., Walcott, 1879, pl. ii, fig. 17.....         | 19    |
| † <i>Discophycus</i> , n. g., Walcott, 1879.....                            | 19    |
| <i>D. typicalis</i> , n. s., Walcott, 1879, pl. ii, figs. 18, 18a.....      | 19    |

\* Κύαθος, a cup; φύκος, a weed.

† Δίσκος, a disk; φύκος, a sea-weed.

|                                                | Page.   |
|------------------------------------------------|---------|
| Summary of results.....                        | 1-9     |
| Fossils of the Cambrian.....                   | 11-64   |
| Observations on <i>Olenellus howelli</i> ..... | 32-39   |
| Fossils of the Lower Silurian.....             | 65-98   |
| Fossils of the Devonian.....                   | 99-211  |
| Fossils of the Carboniferous.....              | 212-267 |
| Systematic list of species.....                | 268-281 |
| Paleozoic section in Central Nevada.....       | 283-285 |
| Index.....                                     | 287-298 |

FOSSILS OF THE CAMBRIAN.

Prospect Mountain Group.

Porifera.

|                                                                   |       |
|-------------------------------------------------------------------|-------|
| <i>Protospongia</i> , Salter.....                                 | 11    |
| <i>P. fenestrata</i> , Salter, 1884, pl. ix, figs. 5, 5 a, b..... | 11-12 |

Brachiopoda.

|                                                                                           |       |
|-------------------------------------------------------------------------------------------|-------|
| <i>Lingulepis</i> , Hall.....                                                             | 12    |
| <i>L. macra</i> , H. & W., 1877.....                                                      | 12-13 |
| <i>L. ? minuta</i> , H. & W., 1877.....                                                   | 13    |
| <i>Lingula</i> , Brugnière.....                                                           | 13    |
| <i>L. ? manticula</i> , White, 1874, pl. ix, figs. 3 and pl. xi, fig. 2.....              | 13-14 |
| <i>Obolella</i> , Billings.....                                                           | 14    |
| <i>O. discoides</i> , H. & W., 1877.....                                                  | 14    |
| <i>Acrothela</i> , Linnarsson.....                                                        | 14    |
| <i>A. ? dichotoma</i> , n. s., Walcott, 1884, pl. ix, fig. 11.....                        | 14-15 |
| <i>Sacnella</i> , Billings.....                                                           | 15    |
| <i>S. ? conula</i> , n. s., Walcott, 1884, pl. ix, fig. 6.....                            | 15-16 |
| <i>Acrotreta</i> , Kutorga.....                                                           | 16-17 |
| <i>A. gemma</i> , Billings, 1865, pl. i, figs. 1 a, 1 b, 1 d-f; pl. ix, figs. 9, 9 a..... | 17-18 |
| <i>Kutorgina</i> , Billings.....                                                          | 18    |
| <i>K. whitfeldi</i> , n. s., Walcott, 1884, pl. ix, figs. 4, 4 a.....                     | 18-19 |
| <i>K. prospectensis</i> , n. s., Walcott, 1884, pl. ix, figs. 1 a, b.....                 | 19    |
| <i>K. sculptilis</i> , Meek sp., 1873, pl. i, figs. 7, 7 a, b; pl. ix, fig. 7.....        | 20-21 |
| <i>Leptana</i> , Dalman.....                                                              | 22    |
| <i>L. melita</i> , H. & W., 1877.....                                                     | 22    |
| <i>Orthis</i> , Dalman.....                                                               | 22    |
| <i>O. eurekaensis</i> , n. s., Walcott, 1884, pl. ix, figs. 8, 8 a.....                   | 22-23 |

Pteropoda.

|                                                                      |       |
|----------------------------------------------------------------------|-------|
| <i>Stenotheca</i> , Salter.....                                      | 23    |
| <i>S. elongata</i> , n. s., Walcott, 1884, pl. ix, figs. 2, 2 a..... | 23    |
| <i>Hyolithes</i> , Eichwald.....                                     | 23    |
| <i>H. primordialis</i> , Hall sp., 1861.....                         | 23-24 |

Pacilopoda.

|                                                                                              |        |
|----------------------------------------------------------------------------------------------|--------|
| <i>Agnostus</i> , Brongniart.....                                                            | 24     |
| <i>A. richmondensis</i> , n. s., Walcott, 1884, pl. ix, fig. 10.....                         | 24-25  |
| <i>A. seclusus</i> , n. s., Walcott, 1884, pl. ix, fig. 14.....                              | 25     |
| <i>A. bidens</i> , Meek, 1873, pl. ix, figs. 13, 13 a.....                                   | 26, 27 |
| <i>A. communis</i> , H. & W., 1877.....                                                      | 27     |
| <i>A. neon</i> , H. & W., 1877.....                                                          | 27     |
| <i>A. prolongus</i> , H. & W., 1877.....                                                     | 28     |
| <i>Olenellus</i> , Hall.....                                                                 | 28     |
| <i>O. iddingei</i> , n. s., Walcott, 1884, pl. ix, fig. 12.....                              | 28     |
| <i>O. gilberti</i> , Meek, MSS., 1874, pl. ix, figs. 16, 16 a; pl. xxi, fig. 13.....         | 29     |
| <i>O. howelli</i> , Meek, MSS., 1871, pl. ix, figs. 15, 15 a, b, and pl. xxi, figs. 1-9..... | 30-31  |
| Observations on <i>Olenellus howelli</i> , pl. xxi, figs. 1-7.....                           | 32-39  |
| <i>Dicelloccephalus</i> , Owen.....                                                          | 40     |
| <i>D. bilobatus</i> , H. & W., 1877.....                                                     | 40     |
| <i>D. osceola</i> , Hall, 1863, pl. ix, fig. 25.....                                         | 40     |
| <i>D. narutus</i> , n. s., Walcott, 1884, pl. x, fig. 15.....                                | 40-41  |
| <i>D. richmondensis</i> , n. s., Walcott, 1884, pl. x, fig. 7.....                           | 41-42  |
| <i>D. ? angustifrons</i> , n. s., Walcott, 1884, pl. x, figs. 1, 1 a, b.....                 | 42-43  |
| <i>D. tole</i> , n. s., Walcott, 1884, pl. x, fig. 19.....                                   | 43-44  |
| <i>D. macula</i> , n. s., Walcott, 1884, pl. x, fig. 13.....                                 | 44-45  |
| <i>D. ? quadriiceps</i> , H. & W., 1873, pl. ix, fig. 24.....                                | 45     |

|                                                                               | Page         |
|-------------------------------------------------------------------------------|--------------|
| <i>M. corroboratus</i> , n. s., Walcott, 1883, pl. xvii, fig. 6 .....         | 4, 210       |
| <i>Iocrinus</i> , Hall .....                                                  | 4, 210       |
| <i>I. trentonensis</i> , n. s., Walcott, 1883, pl. xvii, figs. 7, 8 .....     | 4-5, 210-211 |
| <i>Dendrocrinus</i> , Hall .....                                              | 5, 211       |
| <i>D. retractilis</i> , n. s., Walcott, 1883, pl. xvii, fig. 4 .....          | 5, 211       |
| <i>Calceocrinus</i> , Hall .....                                              | 6, 212       |
| <i>O. barrandii</i> , n. s., Walcott, 1883, pl. xvii, figs. 1, 2 .....        | 6, 212       |
| <i>Metoptoma</i> , Phillips .....                                             | 6, 212       |
| <i>M. billingsi</i> , n. s., Walcott, 1883, pl. xvii, figs. 12, 13 a .....    | 6-7, 212-213 |
| <i>Beyrichia</i> , McCoy .....                                                | 7, 213       |
| <i>B. bella</i> , n. s., Walcott, 1883, pl. xvii, figs. 11, 11 a .....        | 7, 213       |
| <i>Leperditia</i> , Rousault .....                                            | 7, 213       |
| Subgenus <i>Isochilina</i> , Jones .....                                      | 7, 213       |
| <i>S. (Isochilina) armata</i> , n. s., Walcott, 1883, pl. xvii, fig. 10 ..... | 7-8, 213-214 |

## 17.

WALCOTT, C. D. Cambrian system of the United States and Canada. <Bull. Philosophical Soc., Washington, vol. vi, pp. 97-102. Washington. 1884.

Separates were published in [December, 1883].

## 18.

WALCOTT, C. D. Pre-carboniferous strata in the Grand Cañon of the Colorado, Arizona. <Amer. Jour. Sci., 3d ser., vol. xxvi, pp. 437-442, and p. 484. December. New Haven, 1883.

## 19.

WALCOTT, C. D. Fresh-water shells from the Paleozoic Rocks of Nevada. <Science, vol. ii, pp. 808-809. December. Cambridge, 1883.

|                                                                   | Page |
|-------------------------------------------------------------------|------|
| <i>Zaptychius</i> , n. g., Walcott, 1883 .....                    | 808  |
| <i>Zaptychius carbonaria</i> , n. s., Walcott, 1883, fig. 1 ..... | 808  |
| <i>Physa prisca</i> , n. s., Walcott, 1883, fig. 2 .....          | 809  |
| <i>Ampullaria powelli</i> , n. s., Walcott, 1883, fig. 3 .....    | 809  |

## 20.

WALCOTT, C. D. Appendages of the Trilobite. Notes on the original specimen described by Prof. Mickelborough (Journ. Cincinnati Soc. Nat. Hist., vol. vi, p. 200, 1883). <Science, vol. iii, pp. 279-281, figs. 3. March. Cambridge, 1884.

## 21.

WALCOTT, C. D. Note on Paleozoic Rocks of Central Texas. <Amer. Jour. Sci., 3d ser., vol. xxvii, pp. 431-433. December. New Haven, 1884.

## 22.

WALCOTT, C. D. Deer Creek Coal-field, White Mountain Indian Reservation, Arizona. Report and Appendix. <U. S. Senate Ex. Doc. No. 20, 48th Congress, 2d session, pp. 1-7. December. Washington, 1884.

## 23.

WALCOTT, C. D. Paleontology of the Eureka District. <Monograph viii, U. S. Geol. Surv., pp. i-xiii, 1-298, pls. i-xxiv, figs. 1-7 in text. Washington, 1884.

## CONTENTS.

|                                                                  | Page |
|------------------------------------------------------------------|------|
| Letter of transmittal to Mr. Arnold Hague, by the author .....   | v    |
| Letter of transmittal to the director, by Mr. Arnold Hague ..... | vii  |
| Preface .....                                                    | ix   |



|                                                | Page.   |
|------------------------------------------------|---------|
| Summary of results .....                       | 1-9     |
| Fossils of the Cambrian .....                  | 11-64   |
| Observations on <i>Olenellus howelli</i> ..... | 32-39   |
| Fossils of the Lower Silurian .....            | 65-98   |
| Fossils of the Devonian .....                  | 99-211  |
| Fossils of the Carboniferous .....             | 212-267 |
| Systematic list of species .....               | 268-281 |
| Paleozoic section in Central Nevada .....      | 283-285 |
| Index .....                                    | 287-298 |

FOSSILS OF THE CAMBRIAN.

Prospect Mountain Group.

Porifera.

|                                                                    |       |
|--------------------------------------------------------------------|-------|
| <i>Protospongia</i> , Salter .....                                 | 11    |
| <i>P. fenestrata</i> , Salter, 1864, pl. ix, figs. 5, 5 a, b ..... | 11-12 |

Brachiopoda.

|                                                                                            |       |
|--------------------------------------------------------------------------------------------|-------|
| <i>Lingulepis</i> , Hall .....                                                             | 12    |
| <i>L. mæra</i> , H. & W., 1877 .....                                                       | 12-13 |
| <i>L. ? minuta</i> , H. & W., 1877 .....                                                   | 13    |
| <i>Lingula</i> , Brugulère .....                                                           | 13    |
| <i>L. ? nauticula</i> , White, 1874, pl. ix, figs. 3 and pl. xi, fig. 2 .....              | 13-14 |
| <i>Obolella</i> , Billings .....                                                           | 14    |
| <i>O. discoidea</i> , H. & W., 1877 .....                                                  | 14    |
| <i>Acrothele</i> , Linnarsson .....                                                        | 14    |
| <i>A. ? dichotoma</i> , n. s., Walcott, 1884, pl. ix, fig. 11 .....                        | 14-15 |
| <i>Scenella</i> , Billings .....                                                           | 15    |
| <i>S. ? conula</i> , n. s., Walcott, 1884, pl. ix, fig. 6 .....                            | 15-16 |
| <i>Aerotretra</i> , Kutorga .....                                                          | 16-17 |
| <i>A. gemma</i> , Billings, 1865, pl. i, figs. 1 a, 1 b, 1 d-f; pl. ix, figs. 9, 9 a ..... | 17-18 |
| <i>Kutorgina</i> , Billings .....                                                          | 18    |
| <i>K. schiffeldti</i> , n. s., Walcott, 1884, pl. ix, figs. 4, 4 a .....                   | 18-19 |
| <i>K. prospectensis</i> , n. s., Walcott, 1884, pl. ix, figs. 1 a, b .....                 | 19    |
| <i>K. sculptilis</i> , Meek sp., 1873, pl. i, figs. 7, 7 a, b; pl. ix, fig. 7 .....        | 20-21 |
| <i>Leptaena</i> , Dalman .....                                                             | 22    |
| <i>L. melita</i> , H. & W., 1877 .....                                                     | 22    |
| <i>Orthis</i> , Dalman .....                                                               | 22    |
| <i>O. eurekaensis</i> , n. s., Walcott, 1884, pl. ix, figs. 8, 8 a .....                   | 22-23 |

Pteropoda.

|                                                                       |       |
|-----------------------------------------------------------------------|-------|
| <i>Stenotheca</i> , Salter .....                                      | 23    |
| <i>S. elongata</i> , n. s., Walcott, 1884, pl. ix, figs. 2, 2 a ..... | 23    |
| <i>Hyalithes</i> , Eichwald .....                                     | 23    |
| <i>H. primordialis</i> , Hall sp., 1861 .....                         | 23-24 |

Pæcilopoda.

|                                                                                               |        |
|-----------------------------------------------------------------------------------------------|--------|
| <i>Agnostus</i> , Brongniart .....                                                            | 24     |
| <i>A. richmondensis</i> , n. s., Walcott, 1884, pl. ix, fig. 10 .....                         | 24-25  |
| <i>A. seclusus</i> , n. s., Walcott, 1884, pl. ix, fig. 14 .....                              | 25     |
| <i>A. bidens</i> , Meek, 1873, pl. ix, figs. 13, 13 a .....                                   | 26, 27 |
| <i>A. communis</i> , H. & W., 1877 .....                                                      | 27     |
| <i>A. neon</i> , H. & W., 1877 .....                                                          | 27     |
| <i>A. prolongus</i> , H. & W., 1877 .....                                                     | 28     |
| <i>Olenellus</i> , Hall .....                                                                 | 28     |
| <i>O. iddingsi</i> , n. s., Walcott, 1884, pl. ix, fig. 12 .....                              | 28     |
| <i>O. gilberti</i> , Meek, MSS., 1874, pl. ix, figs. 16, 16 a; pl. xxi, fig. 13 .....         | 29     |
| <i>O. howelli</i> , Meek, MSS., 1871, pl. ix, figs. 15, 15 a, b, and pl. xxi, figs. 1-9 ..... | 30-31  |
| Observations on <i>Olenellus howelli</i> , pl. xxi, figs. 1-7 .....                           | 32-39  |
| <i>Dicelloccephalus</i> , Owen .....                                                          | 40     |
| <i>D. bilobatus</i> , H. & W., 1877 .....                                                     | 40     |
| <i>D. oscicola</i> , Hall, 1863, pl. ix, fig. 25 .....                                        | 40     |
| <i>D. navutus</i> , n. s., Walcott, 1884, pl. x, fig. 15 .....                                | 40-41  |
| <i>D. richmondensis</i> , n. s., Walcott, 1884, pl. x, fig. 7 .....                           | 41-42  |
| <i>D. ? angustifrons</i> , n. s., Walcott, 1884, pl. x, figs. 1, 1 a, b .....                 | 42-43  |
| <i>D. iole</i> , n. s., Walcott, 1884, pl. x, fig. 19 .....                                   | 43-44  |
| <i>D. ma-ica</i> , n. s., Walcott, 1884, pl. x, fig. 13 .....                                 | 44-45  |
| <i>D. ? quadriceps</i> , H. & W., 1879, pl. ix, fig. 24 .....                                 | 45     |

|                                                                                           | Page  |
|-------------------------------------------------------------------------------------------|-------|
| <i>P. ? expansus</i> , n. s., Walcott, 1884, pl. ix, fig. 19.....                         | 45-46 |
| <i>Psychoparia</i> , Corda.....                                                           | 46    |
| <i>P. ? prospectensis</i> , n. s., Walcott, 1884, pl. ix, fig. 20.....                    | 46-47 |
| <i>P. ? linearis</i> , n. s., Walcott, 1884, pl. ix, figs. 18, 18 a.....                  | 47-48 |
| <i>P. (Solenopleura ?) breviceps</i> , n. s., Walcott, 1884, pl. x, fig. 9.....           | 49    |
| <i>P. ? cornutus</i> , n. s., Walcott, 1884, pl. x, figs. 8, 8 a, b.....                  | 49-50 |
| <i>P. (Euloma ?) dissimilis</i> , n. s., Walcott, 1884, pl. ix, fig. 28.....              | 51    |
| <i>P. occidentalis</i> , n. s., Walcott, 1884, pl. x, fig. 5.....                         | 51-52 |
| <i>P. similis</i> , n. s., Walcott, 1884, pl. x, fig. 10.....                             | 52-53 |
| <i>P. similis</i> var. <i>robustus</i> , n. var., Walcott, 1884, pl. i, figs. 9, 9 a..... | 53    |
| <i>P. (Euloma ?) affinis</i> , n. s., Walcott, 1884, pl. x, fig. 12.....                  | 54    |
| <i>P. breviceps</i> , n. s., Walcott, 1884, pl. x, figs. 17, 18.....                      | 54-55 |
| <i>P. owenii</i> , M. & H., 1861, pl. x, figs. 3, 3 a.....                                | 55-56 |
| <i>P. angustus</i> , H. & W., 1877, pl. ix, fig. 20.....                                  | 56    |
| <i>P. granulatus</i> , H. & W., 1877.....                                                 | 57    |
| <i>P. angustus</i> , H. & W., 1877.....                                                   | 57    |
| <i>P. nitidus</i> , H. & W., 1877.....                                                    | 57-58 |
| <i>P. unileucatus</i> , H. & W., 1877.....                                                | 58    |
| Subgenus <i>Pteroccephalus</i> , Roemer.....                                              | 58    |
| <i>P. (Pteroccephalus) occidentalis</i> , n. s., Walcott, 1884, pl. ix, fig. 21.....      | 58-59 |
| <i>P. (Pteroccephalus) laticeps</i> , H. & W., 1877.....                                  | 59    |
| <i>Anomocare</i> , Angolin.....                                                           | 59    |
| <i>A. ? parvum</i> , n. s., Walcott, 1884, pl. ix, fig. 17.....                           | 59-60 |
| <i>Psychopsis</i> , Hall.....                                                             | 60    |
| <i>P. minuta</i> , Whitfield ? 1878, pl. x, fig. 23.....                                  | 60-61 |
| <i>Chariocephalus</i> , Hall.....                                                         | 61    |
| <i>A. ? tumifrons</i> , H. & W., 1877, pl. x, fig. 16.....                                | 61    |
| <i>Agraulis</i> , Corda.....                                                              | 61    |
| <i>A. ? globosus</i> , n. s., Walcott, 1884, pl. ix, fig. 23.....                         | 61-62 |
| <i>Arethusa</i> , Barrande.....                                                           | 62    |
| <i>A. americana</i> , n. s., Walcott, 1884, pl. ix, fig. 27.....                          | 62-63 |
| <i>Oxygaster</i> , Brongniart.....                                                        | 63    |
| <i>O. ? spinosa</i> , n. s., Walcott, 1884, pl. ix, fig. 22.....                          | 63    |
| <i>O. ? problematica</i> , n. s., Walcott, 1884, pl. x, figs. 2 a, b, and 4.....          | 63-64 |

## FOSSILS OF THE LOWER SILURIAN.

## Pogonip Group.

|                                                                            |       |
|----------------------------------------------------------------------------|-------|
| <i>Rhynchopoda</i> .....                                                   |       |
| <i>Receptaculites</i> DeFrance.....                                        | 65    |
| <i>R. mammillaris</i> , MSS., Newberry, 1880, pl. xi, fig. 11.....         | 65-66 |
| <i>R. elongatus</i> , n. s., Walcott, 1884.....                            | 66-67 |
| <i>R. ellipticus</i> , n. s., Walcott, 1884, pl. xi, fig. 12.....          | 67    |
| <i>Brachiopoda</i> .....                                                   |       |
| <i>Obolus</i> , Billings.....                                              | 67    |
| <i>O. ? ambigua</i> , n. s., Walcott, 1884, pl. i, figs. 2 a-c.....        | 67-68 |
| <i>schizambon</i> , n. g., Walcott, 1884.....                              | 69-70 |
| <i>O. typicalis</i> , n. s., Walcott, 1884, pl. i, figs. 3 a-d.....        | 70-71 |
| <i>Strophomena</i> , Rafinesque.....                                       | 71    |
| <i>S. nemea</i> , H. & W., 1877.....                                       | 71    |
| <i>Orthis</i> , Dalman.....                                                | 72    |
| <i>O. parvula</i> , Conrad, 1843, pl. xi, figs. 3 a, b.....                | 72    |
| <i>O. testudinaria</i> , Dalman, 1827, pl. xi, figs. 10, 10 a.....         | 72-73 |
| <i>O. hamburgensis</i> , n. s., Walcott, 1884, pl. xi, figs. 5, 5 a.....   | 73    |
| <i>O. lanensis</i> , n. s., Walcott, 1884, pl. xi, figs. 6, 6 a.....       | 74    |
| <i>O. tricenaria</i> , Conrad, 1843, pl. xi, figs. 4, 4 a.....             | 74-75 |
| <i>Strophorhynchus</i> , King.....                                         | 75    |
| <i>S. minor</i> , n. s., Walcott, 1884, pl. xi, fig. 9.....                | 75    |
| <i>Feplezia</i> , Hall.....                                                | 75    |
| <i>F. sulcifera</i> , Billings, 1861, pl. xi, figs. 7, 8.....              | 75-76 |
| <i>Lamellibranchiata</i> .....                                             |       |
| <i>Leptinomya</i> , Hall.....                                              | 76    |
| <i>L. contracta</i> , Salter ? 1859, pl. xi, figs. 15, 15 a.....           | 76    |
| <i>L. ? hamburgensis</i> , n. s., Walcott, 1884, pl. xi, figs. 1, 1 a..... | 76-77 |
| <i>Modiolopsis</i> , Hall.....                                             | 77    |



|                                                                                             | Page. |
|---------------------------------------------------------------------------------------------|-------|
| <i>M. occidentis</i> , n. s., Walcott, 1884, pl. i, fig. 5, and pl. xi, figs. 14, 14 a..... | 77-78 |
| <i>M. pogonipensis</i> , n. s., Walcott, 1884, pl. i, fig. 6, and pl. xi, fig. 13.....      | 78    |
| <i>Gasteropoda.</i>                                                                         |       |
| <i>Raphistoma</i> , Hall.....                                                               | 78    |
| <i>R. nasoni</i> , Hall, 1861, pl. xi, figs. 21, 21 a.....                                  | 78-79 |
| <i>Murchisonia</i> , D'Archiac and De Verneuil.....                                         | 79    |
| <i>M. milleri</i> , Hall ? 1877, pl. i, figs. 12, 12 a, b.....                              | 79-80 |
| <i>Pleurotomaria</i> , DeFrance.....                                                        | 80    |
| <i>P. lonensis</i> , n. s., Walcott, 1884, pl. xi, fig. 22.....                             | 80    |
| <i>Helicotoma</i> , Salter.....                                                             | 81    |
| <i>Helicotoma</i> , sp. ? Walcott, 1884.....                                                | 81    |
| <i>Maclurea</i> , Le Sueur.....                                                             | 81    |
| <i>M. annulata</i> , n. s., Walcott, 1884, pl. xi, figs. 19, 19 a.....                      | 81-82 |
| <i>M. subannulata</i> , n. s., Walcott, 1884, pl. xi, figs. 18, 18 a, b.....                | 82    |
| <i>M. carinata</i> , n. s., Walcott, 1884, pl. xi, figs. 20, 20 a.....                      | 82-83 |
| <i>Maclurea</i> , sp. ? Walcott, 1884.....                                                  | 83    |
| <i>Metoptoma</i> , Phillips.....                                                            | 83    |
| <i>M. philipsi</i> , n. s., Walcott, 1884, pl. i, figs. 4, 4 a.....                         | 83-84 |
| <i>M. ? analoga</i> , n. s., Walcott, 1884, pl. i, figs. 11, 11 a.....                      | 84    |
| <i>Cyrtolites</i> , Conrad.....                                                             | 84    |
| <i>C. sinuatus</i> , H. & W., 1877.....                                                     | 84    |
| <i>Pteropoda.</i>                                                                           |       |
| <i>Coleoprion</i> , Sandberger.....                                                         | 85    |
| <i>C. minuta</i> , n. s., Walcott, 1884, pl. xi, figs. 17, 17 a, and pl. xii, fig. 21.....  | 85    |
| <i>Hyolithes</i> , Eichwald.....                                                            | 85    |
| <i>H. vanuzemi</i> , n. s., Walcott, 1884, pl. xi, figs. 16, 16 a, b.....                   | 85-86 |
| <i>Cephalopoda.</i>                                                                         |       |
| <i>Orthoceras</i> , pl. xii, figs. 1, 1 a-c, 2, 3.....                                      | 86    |
| <i>Endoceras proteiforme</i> , Hall ? 1847, pl. xii, figs. 1, 1 a-c.....                    | 86    |
| <i>Orthoceras multicameratum</i> , Hall ? 1847, pl. xii, fig. 3.....                        | 86    |
| <i>Orthoceras</i> , sp. ? Walcott, 1884, pl. xii, fig. 2.....                               | 86    |
| <i>Endoceras multitubulatum</i> , Hall ? 1847.....                                          | 87    |
| <i>Orthoceras</i> , Walcott, 1884, pl. xii, fig. 1 b and figs. 1, 2, p. 87.....             | 87    |
| <i>Crustacea.</i>                                                                           |       |
| <i>Leperditia</i> , Rouault.....                                                            | 88    |
| <i>L. bicta</i> , White, 1874.....                                                          | 88    |
| <i>Beyrichia</i> , McCoy.....                                                               | 88    |
| <i>Beyrichia</i> , sp. ? Walcott, 1884.....                                                 | 88    |
| <i>Plumulites</i> , Barrande.....                                                           | 88    |
| <i>Pacilopoda.</i>                                                                          |       |
| <i>Dicelloccephalus</i> , Owen.....                                                         | 89    |
| <i>D. finalis</i> , n. s., Walcott, 1884, pl. xii, figs. 12, 12 a, b.....                   | 89-90 |
| <i>D. inexpectans</i> , n. s., Walcott, 1884, pl. i, fig. 10.....                           | 90    |
| <i>Ptychoparia</i> , Corda.....                                                             | 91    |
| <i>P. ? annectans</i> , n. s., Walcott, 1884, pl. xii, fig. 18.....                         | 91    |
| <i>Bathyurus</i> , Billings.....                                                            | 91    |
| <i>B. ? tuberculatus</i> , n. s., Walcott, 1884, pl. xii, fig. 9.....                       | 91-92 |
| <i>B. ? congeneris</i> , n. s., Walcott, 1884, pl. xii, fig. 8.....                         | 92-93 |
| <i>B. ? similinus</i> , n. s., Walcott, 1884, pl. xii, fig. 11.....                         | 93    |
| <i>Oyphaspis</i> , Burmeister.....                                                          | 93    |
| <i>C. ? brevimarginatus</i> , n. s., Walcott, 1884, pl. xii, fig. 10.....                   | 93-94 |
| <i>Amphion</i> , Pander.....                                                                | 94    |
| <i>A. nevadensis</i> , n. s., Walcott, 1884, pl. xii, fig. 13.....                          | 94    |
| <i>Ceraurus</i> , Green.....                                                                | 95    |
| <i>Ceraurus</i> — ? Walcott, 1884, pl. xii, fig. 17.....                                    | 95    |
| <i>Symphynurus</i> , Goldfuss.....                                                          | 95    |
| <i>S. ? goldfussi</i> , n. s., Walcott, 1884, pl. xii, fig. 16.....                         | 95    |
| <i>Barrandia</i> , McCoy.....                                                               | 96    |
| <i>B. mecoyi</i> , n. s., Walcott, 1884, pl. xii, fig. 5.....                               | 96    |
| <i>Barrandia</i> ? sp. ? Walcott, 1884, pl. xii, fig. 6.....                                | 96-97 |
| <i>Illoenus</i> , Hall.....                                                                 | 97    |
| <i>I. eurekaensis</i> , n. s., Walcott, 1884, pl. xii, figs. 4, 4 a.....                    | 97-98 |
| <i>Asaphus</i> , Brongniart.....                                                            | 98    |
| <i>A. caribouensis</i> , n. s., Walcott, 1884, pl. xii, figs. 7, 7 a, b.....                | 98    |
| <i>A. ? curiosa</i> , Billings, 1865, pl. xii, fig. 15.....                                 | 98    |

## FOSSILS OF THE DEVONIAN.

Page.

|                                                                                         |         |
|-----------------------------------------------------------------------------------------|---------|
| <i>Strophomena</i> , Roemer .....                                                       | 99      |
| <i>S. roemeri</i> , n. s., Walcott, 1884, pl. xiii, fig. 12 .....                       | 99      |
| <i>Strophomena</i> , Roemer .....                                                       | 99      |
| <i>Strophomena</i> , sp. ? Walcott, 1884 .....                                          | 99      |
| <i>Strophomena</i> , Goldfuss .....                                                     | 100     |
| <i>Favosites hemispherica</i> , Yandell & Shumard, 1876 .....                           | 100     |
| <i>Favosites basaltico</i> , Goldfuss, 1829 .....                                       | 100-101 |
| <i>Favosites</i> , n. sp., Walcott, 1884 .....                                          | 101     |
| <i>Fistulipora</i> , sp. ? Walcott, 1884 .....                                          | 101     |
| <i>Alveolites rockfordensis</i> , Hall ? 1864 .....                                     | 102     |
| <i>Cladopora pulchra</i> , Rominger ? 1876 .....                                        | 102     |
| <i>Cladopora</i> , sp. nndt., Walcott, 1884 .....                                       | 102     |
| <i>Thecia ramosa</i> , Rominger ? 1876 .....                                            | 102-103 |
| <i>Syringopora hisingeri</i> , Billings, 1859 .....                                     | 103     |
| <i>Syringopora perelegans</i> , Billings, 1859 .....                                    | 103     |
| <i>Aulopora serpens</i> , Goldfuss ? .....                                              | 103     |
| <i>Cyathophyllum corniculum</i> , Milne-Edwards ? .....                                 | 104     |
| <i>Cyathophyllum rugosum</i> , Edwards and Haime, 1876 .....                            | 104     |
| <i>Cyathophyllum davidsoni</i> , Milne-Edwards, 1876 .....                              | 105     |
| <i>Cyathophyllum</i> , n. s., Walcott, 1884 .....                                       | 104-105 |
| <i>Cyathophyllum</i> , n. s., Walcott, 1884 .....                                       | 105     |
| <i>Acerularia pentagona</i> , Goldfuss, 1877 .....                                      | 105     |
| <i>Pachyphyllum woodmani</i> (White), H. & W., 1864 .....                               | 105     |
| <i>Diphyphyllum simcoeae</i> , Billings, 1876 .....                                     | 105-106 |
| <i>Cystiphyllum americanum</i> , Milne-Edwards, 1876 .....                              | 106     |
| <i>Cystiphyllum</i> , n. s., Walcott, 1884 .....                                        | 106     |
| <i>Brachiopoda</i> .....                                                                |         |
| <i>Lingula</i> , Bruguière .....                                                        | 106     |
| <i>L. lema</i> , Hall, 1867, pl. xiii, fig. 2 .....                                     | 106-107 |
| <i>L. lugea</i> , Hall, 1860, pl. ii, fig. 2 .....                                      | 107     |
| <i>L. lugea</i> , var. <i>nevadensis</i> , n. var., Walcott, 1884, pl. ii, fig. 3 ..... | 107     |
| <i>L. alba-pinnensis</i> , n. s., Walcott, 1884, pl. ii, figs. 1, 1 a .....             | 108     |
| <i>L. lonensis</i> , n. s., Walcott, 1884, pl. xiii, figs. 1, 1 a .....                 | 108-109 |
| <i>L. whitei</i> , n. s., Walcott, 1884, pl. xiii, fig. 3 .....                         | 109-111 |
| <i>Dicelina</i> , Lamarck .....                                                         | 112     |
| <i>D. minuta</i> , Hall, 1843, pl. xiii, fig. 5 .....                                   | 112     |
| <i>Dicelina</i> , sp. ? Walcott, 1884 .....                                             | 112     |
| <i>D. lodensis</i> , Hall, 1843, pl. ii, figs. 5, 5 a .....                             | 112-113 |
| <i>Pholidops</i> , Hall .....                                                           | 113     |
| <i>P. bellula</i> , n. s., Walcott, 1884, pl. ii, figs. 6, 6 a, b .....                 | 113-114 |
| <i>P. quadrangularis</i> , n. s., Walcott, 1884, pl. ii, fig. 7 .....                   | 114     |
| <i>Orthis</i> , Dalman .....                                                            | 114     |
| <i>O. mcgarranae</i> , Meek, 1868 .....                                                 | 114     |
| <i>O. impressa</i> , Hall, 1843, pl. xiii, fig. 13 .....                                | 115     |
| <i>O. tullensis</i> , Vanuxem, 1842, pl. ii, figs. 12, 12 a .....                       | 115-116 |
| <i>Stenidium</i> , Hall .....                                                           | 116     |
| <i>S. devonicum</i> , n. s., Walcott, 1884, pl. xiii, figs. 4, 4 a .....                | 116     |
| <i>Streptorhynchus</i> , King .....                                                     | 117     |
| <i>S. cheamungensis</i> , Conrad sp., 1842, pl. xiii, figs. 7 and 16 .....              | 117-118 |
| <i>Strophomena</i> , Blainville .....                                                   | 118     |
| <i>S. rhomboidalis</i> , Wilckens, sp. ....                                             | 118     |
| <i>Strophodonta</i> , Hall .....                                                        | 118     |
| <i>S. armata</i> , Conrad, sp., 1842, pl. ii, figs. 8, 8 a, b .....                     | 118-119 |
| <i>S. patersoni</i> , Hall, 1837 .....                                                  | 119     |
| <i>S. inaperturata</i> , Hall, 1837, pl. xi, figs. 11, 11 a .....                       | 119     |
| <i>S. purpurea</i> , Conrad, sp., 1842, pl. xiii, fig. 11 .....                         | 120-121 |
| <i>S. punctulifera</i> , Conrad, sp., pl. xiii, fig. 20 .....                           | 121     |
| <i>S. arcuata</i> , Hall ? 1838 .....                                                   | 121     |
| <i>S. adriaci</i> , Miller, 1883, pl. xiv, fig. 6 .....                                 | 122     |
| <i>Chonetes</i> , Fischer .....                                                         | 122-123 |
| <i>C. hemispherica</i> , Hall, 1837 .....                                               | 123     |
| <i>C. deflexa</i> , Hall, 1837, pl. ii, figs. 8, 8 a, b .....                           | 123     |



|                                                                                                                               | Page.   |
|-------------------------------------------------------------------------------------------------------------------------------|---------|
| <i>C. mucronata</i> , Hall †, 1843 .....                                                                                      | 124-125 |
| <i>C. setigera</i> , Hall, 1843 .....                                                                                         | 125     |
| <i>C. macrostriata</i> , n. s., Walcott, 1884, pl. ii, fig. 13, pl. xiii, figs. 14, 14 a-c .....                              | 126-127 |
| <i>C. alitriata</i> , n. s., Walcott, 1884, pl. xiii, figs. 15, 15 a .....                                                    | 127-128 |
| <i>Productus</i> , Sowerby .....                                                                                              | 128     |
| Subgenus <i>Productella</i> , Hall, 1867 .....                                                                                | 128     |
| <i>P. (Productella) subaculeatus</i> , Murch., pl. vii, fig. 2, pl. xiii, figs. 19, 19 a, 20, 20 a .....                      | 128-129 |
| <i>P. (Productella) shumardianus</i> , Hall, 1858, pl. xiv, fig. 1 .....                                                      | 129-130 |
| <i>P. (Productella) hallanus</i> , n. s., Walcott, 1884, pl. xiii, figs. 17, 17 a .....                                       | 130-131 |
| <i>P. (Productella) navicella</i> , Hall, 1857, pl. xiii, fig. 9 .....                                                        | 131     |
| <i>P. (Productella) truncatus</i> , Hall, 1857, pl. xiv, fig. 2 .....                                                         | 131-132 |
| <i>P. (Productella) lachrymosus</i> var. <i>limus</i> , Conrad, sp., 1842, pl. xiii, figs. 18, 18 a .....                     | 132     |
| <i>P. (Productella) lachrymosus</i> var. <i>stigmatus</i> , Hall, 1867 .....                                                  | 132-133 |
| <i>P. (Productella) speciosus</i> , Hall, 1857, pl. xiii, fig. 8 .....                                                        | 133     |
| <i>P. hirsutiforme</i> , n. s., Walcott, 1881, pl. ii, figs. 10, 10 a .....                                                   | 133-134 |
| <i>Spirifera</i> , Sowerby .....                                                                                              | 134     |
| <i>S. disjuncta</i> , Sowerby, 1840 .....                                                                                     | 134-135 |
| <i>S. raricosta</i> , Conrad, sp., 1842, pl. iv, figs. 2, 2 a, pl. xiv, fig. 12 .....                                         | 135     |
| <i>S. varicosa</i> , Hall, 1857 .....                                                                                         | 136     |
| <i>S. parryana</i> , Hall †, 1858, pl. xiv, fig. 10 .....                                                                     | 137     |
| <i>Spirifera</i> (sp. undt.), Walcott, 1884 .....                                                                             | 137     |
| <i>S. englemanni</i> , Meek, 1860 .....                                                                                       | 138     |
| <i>S. pinonensis</i> , Meek, 1870, pl. iv, figs. 1, 1 a-f .....                                                               | 138     |
| Subgenus <i>Martinia</i> , McCoy .....                                                                                        | 139     |
| <i>S. (Martinia) glabra</i> , Martin .....                                                                                    | 139     |
| <i>S. (Martinia) glabra</i> var. <i>nevadensis</i> , n. var. Walcott, 1884, pl. iii, fig. 5, pl. xiv, figs. 14, 14 a, b ..... | 139-140 |
| <i>S. (Martinia) maia</i> , Billings, 1860, pl. iii, figs. 1, 1 a-e, pl. xiv, figs. 13, 13 a .....                            | 141-142 |
| <i>S. (Martinia) undifera</i> , Roemer, 1844, pl. iii, figs. 3, 3 a, b; 6, 6 a, pl. xiv, figs. 11, 11 a, b .....              | 143-145 |
| <i>Cyrtina</i> , Davidson .....                                                                                               | 146     |
| <i>C. davidsoni</i> , n. s., Walcott, 1884, pl. iii, figs. 2, 2 a-e .....                                                     | 146-147 |
| <i>C. hamiltonensis</i> , Hall, 1857 .....                                                                                    | 147     |
| <i>Nucleospira</i> , Hall .....                                                                                               | 147     |
| <i>N. concinna</i> , Hall, 1843 .....                                                                                         | 147     |
| <i>Athyris</i> , McCoy .....                                                                                                  | 148     |
| <i>A. angelica</i> , Hall, 1861 .....                                                                                         | 148     |
| <i>Athyris</i> (sp. undt.), Walcott, 1884 .....                                                                               | 148     |
| <i>Meristella</i> , Hall .....                                                                                                | 148     |
| <i>Whitfieldia</i> , Davidson .....                                                                                           | 148     |
| <i>M. (Whitfieldia) nasuta</i> , Conrad, sp., 1842, pl. iii, fig. 8, 8 a, b .....                                             | 148-149 |
| <i>Atrypa</i> , Dalman .....                                                                                                  | 150     |
| <i>A. reticularis</i> (Linnaeus, sp.), Dalman, pl. xiv, figs. 6, 6 a, b .....                                                 | 150     |
| <i>A. desquamata</i> , Sowerby, pl. xiv, figs. 4, 4 a .....                                                                   | 150-151 |
| <i>Trematospira</i> , Hall .....                                                                                              | 151     |
| <i>T. infrequens</i> , Hall, n. s., Walcott, 1884, pl. iv, figs. 3, 3 a, b .....                                              | 151     |
| <i>Rhynchonella</i> , Fischer .....                                                                                           | 152     |
| <i>R. horsfordi</i> , Hall, 1860, pl. xiv, fig. 3; pl. xv, fig. 6 .....                                                       | 152     |
| <i>R. tethys</i> , Billings, 1860 .....                                                                                       | 152     |
| <i>R. ? occidentalis</i> , n. s., Walcott, 1884, pl. xv, figs. 3, 3 a, b .....                                                | 152-153 |
| <i>R. castanea</i> , Meek, 1868, pl. xv, figs. 1, 1 a; 4, 4 a .....                                                           | 153-155 |
| <i>R. duplicata</i> , Hall, 1843, pl. xiv, fig. 8 .....                                                                       | 155     |
| <i>R. pugnus</i> , Martin, 1809, pl. xiv, figs. 7, 7 a .....                                                                  | 155-157 |
| <i>R. emmonsii</i> , H. & W., 1877 .....                                                                                      | 157     |
| Subgenus <i>Leiorhynchus</i> , Hall .....                                                                                     | 157     |
| <i>R. (Leiorhynchus) nevadensis</i> , n. s., Walcott, 1884, pl. xiv, figs. 9, 9 a, b .....                                    | 157-158 |
| <i>R. (Leiorhynchus) sinuatus</i> , Hall, 1867, pl. xiv, fig. 5 .....                                                         | 158-159 |
| <i>R. (Leiorhynchus) laura</i> , Billings, 1860 .....                                                                         | 159     |
| <i>Pentamerus</i> , Sowerby .....                                                                                             | 159     |
| Subgenus <i>Gypidula</i> , Hall .....                                                                                         | 159     |
| <i>P. comis</i> , Owen, 1852, pl. iii, figs. 4, 7; pl. xiv, figs. 15, 15 a, b; pl. xv, figs. 5, 5 a, b .....                  | 159-161 |
| <i>P. lotis</i> , n. s., Walcott, 1884, pl. iii, figs. 9, 9 a-c .....                                                         | 161-162 |
| <i>Cryptonella</i> , Hall .....                                                                                               | 163     |
| <i>C. ? circula</i> , n. s., Walcott, 1884, pl. xv, figs. 2, 2 a, b .....                                                     | 163     |
| <i>C. pinonensis</i> , n. s., Walcott, 1884, pl. iv, figs. 4, 4 a, b .....                                                    | 163-164 |

*Lamellibranchiata.*

|                                                                                      | Page     |
|--------------------------------------------------------------------------------------|----------|
| <i>Pterinea</i> , Goldfuss .....                                                     | 165      |
| <i>P. flabella</i> , Conrad, sp. 1842, pl. xv, fig. 12; pl. v, fig. 6 .....          | 165      |
| <i>P. newarkensis</i> , n. s., Walcott, 1884, pl. v, fig. 12 .....                   | 165-166  |
| <i>Actinopteria</i> , Hall .....                                                     | 166      |
| <i>A. boydi</i> , Conrad, sp., 1842, pl. v, fig. 2 .....                             | 166      |
| <i>Leiopteria</i> , Hall, 1883, pl. v, figs. 10, 10 a .....                          | 166      |
| <i>L. rafinesquii</i> , Hall, 1883, pl. v, figs. 10, 10 a .....                      | 166      |
| <i>Leptoderma</i> , Hall .....                                                       | 167      |
| <i>L. transversa</i> , n. s., Walcott, 1884, pl. v, fig. 13 .....                    | 167      |
| <i>Limoptera</i> , Hall .....                                                        | 167      |
| <i>L. sarmenticia</i> , n. s., Walcott, 1884, pl. v, figs. 3, 3 a, b .....           | 167-168  |
| <i>Mytilarca</i> , Hall .....                                                        | 168      |
| <i>M. dubia</i> , n. s., Walcott, 1884, pl. iv, fig. 5 .....                         | 168      |
| <i>M. chemungensis</i> , Conrad, 1842, pl. iv, fig. 9 .....                          | 168-169  |
| Subgenus <i>Plethomytilus</i> , Hall .....                                           | 169      |
| <i>M. (Plethomytilus) oviformis</i> , Conrad, 1842, pl. v, fig. 11 .....             | 169      |
| <i>Modiomorpha</i> , Hall .....                                                      | 169      |
| <i>M. altiforme</i> , n. s., Walcott, 1884, pl. v, fig. 9 .....                      | 169-170  |
| <i>M. oblonga</i> , n. s., Walcott, 1884, pl. v, fig. 7 .....                        | 170      |
| <i>M. obtusa</i> , n. s., Walcott, 1884, pl. iv, figs. 8, 8 a .....                  | 171      |
| <i>Goniophora</i> , Phillips .....                                                   | 171      |
| <i>G. perangulata</i> , Hall, 1870, pl. xv, fig. 10 .....                            | 171      |
| <i>Nucula</i> , Lamarek .....                                                        | 172      |
| <i>N. rescuensis</i> , n. s., Walcott, 1884, pl. xv, fig. 9 .....                    | 172      |
| <i>Nucula</i> , sp. ? Walcott, 1884 .....                                            | 172      |
| <i>Dystactella</i> , Hall .....                                                      | 172      |
| <i>D. insularis</i> , n. s., Walcott, 1884, pl. xv, fig. 8 .....                     | 172, 173 |
| <i>Megambonia</i> , Hall .....                                                       | 173      |
| <i>M. occidentalis</i> , n. s., Walcott, 1884, pl. v, fig. 1 .....                   | 173      |
| <i>Nyassa</i> , Hall .....                                                           | 173      |
| <i>N. parva</i> , n. s., Walcott, 1884, pl. xv, figs. 14, 14 a .....                 | 173, 174 |
| <i>Grammysia</i> , De Verneuil .....                                                 | 174      |
| <i>G. minor</i> , n. s., Walcott, 1884, pl. xv, figs. 15, 15 a .....                 | 174-175  |
| <i>Sanguinolites</i> , McCoy .....                                                   | 175      |
| <i>S. ? combensis</i> , n. s., Walcott, 1884, pl. xv, fig. 16 .....                  | 175      |
| <i>S. ? gracilis</i> , n. s., Walcott, 1884, pl. iv, fig. 10 .....                   | 175-176  |
| <i>S. rigidus</i> , White & Whitfield, 1862, pl. xvi, fig. 6 .....                   | 176      |
| <i>S. ? sanduskyensis</i> , Meek, 1871, pl. v, fig. 4 .....                          | 176-177  |
| <i>S. ventricosus</i> , White & Whitfield, sp., 1862, pl. xv, fig. 13 .....          | 177      |
| <i>Concorvium</i> , Brown .....                                                      | 177      |
| <i>C. nevadensis</i> , n. s., Walcott, 1884, pl. xvi, figs. 4, 4 a .....             | 177-178  |
| <i>Paracypselas</i> , Hall .....                                                     | 178      |
| <i>P. occidentalis</i> , H. & W., 1872 .....                                         | 178      |
| <i>Poideonema</i> , Bronn .....                                                      | 178      |
| <i>P. larvis</i> , n. s., Walcott, 1884, pl. iv, fig. 6 .....                        | 178-179  |
| <i>P. deconica</i> , n. s., Walcott, 1884, pl. iv, fig. 7 .....                      | 179-180  |
| <i>Microrodon</i> , Conrad .....                                                     | 180      |
| Subgenus <i>Cypriocardella</i> , Hall .....                                          | 180      |
| <i>M. (Cypriocardella) macrostriatus</i> , n. s., Walcott, 1884, pl. v, fig. 3 ..... | 180      |
| <i>Anodontopsis</i> , McCoy .....                                                    | 180      |
| <i>A. neopetaliformis</i> , n. s., Walcott, 1884, pl. xv, figs. 7, 7 a, b .....      | 180-181  |
| <i>Schizodus</i> , King .....                                                        | 181      |
| Subgenus <i>Cytherodon</i> , Hall .....                                              | 181      |
| <i>S. (Cytherodon) orbicularis</i> , n. s., Walcott, 1884, pl. v, figs. 8, 8 a ..... | 181      |
| <i>Cypriardiscus</i> , Hall .....                                                    | 182      |
| <i>C. induta</i> , Conrad, sp., 1842, pl. v, fig. 14; pl. xv, fig. 11 .....          | 182      |
| <i>Gastropoda.</i>                                                                   |          |
| <i>Pleurocyra</i> , Conrad .....                                                     | 182      |
| <i>P. conradi</i> , n. s., Walcott, 1884, pl. xvi, figs. 1, 1 a .....                | 182-183  |
| <i>P. nidulosa</i> , Conrad, 1841, pl. vi, figs. 3, 3 a, b .....                     | 183      |
| <i>P. nidulosa</i> , n. s., Walcott, 1884, pl. vi, figs. 2, 2 a .....                | 184      |
| <i>P. thuriformis</i> , n. s., Walcott, 1884, pl. vi, figs. 4, 4 a, b .....          | 184      |
| <i>Pleurocyra</i> , Conrad .....                                                     | 185      |
| <i>P. nidulosa</i> , Conrad, 1842 .....                                              | 185      |



|                                                                                        | Page.   |
|----------------------------------------------------------------------------------------|---------|
| <i>Euomphalus</i> , Sowerby .....                                                      | 185     |
| <i>E. eurekaensis</i> , n. s., Walcott, 1884, pl. xvi, figs. 2, 2 a .....              | 185-186 |
| <i>E. (Phanerotinus) laxus</i> , Hall, 1861, pl. vi, fig. 3 .....                      | 186     |
| <i>Eculiomphalus</i> , Portlock .....                                                  | 187     |
| <i>E. devonius</i> , n. s., Walcott, 1884, pl. vi, figs. 6, 6 a .....                  | 187     |
| <i>Stroparollus</i> , Montfort .....                                                   | 187     |
| <i>S. newarkensis</i> , n. s., Walcott, 1884, pl. xvi, figs. 7, 7 a .....              | 187-188 |
| <i>Platyschisma</i> , McCoy .....                                                      | 188     |
| <i>P. ? mecoyi</i> , n. s., Walcott, 1884, pl. xvii, figs. 1, 1 a-c .....              | 188     |
| <i>P. ? ambiguum</i> , n. s., Walcott, 1884, pl. xvii, figs. 3, 3 a .....              | 188-189 |
| <i>Callonema</i> , Hall .....                                                          | 189     |
| <i>C. occidentalis</i> , n. s., Walcott, 1884, pl. xvi, figs. 3, 3 a .....             | 189     |
| <i>Loxonema</i> , Phillips .....                                                       | 190     |
| <i>L. eurekaensis</i> , n. s., Walcott, 1884, pl. xvi, fig. 8 .....                    | 190     |
| <i>L. nobile</i> , n. s., Walcott, 1884, pl. xvi, fig. 9 .....                         | 190-191 |
| <i>L. ? subattenuatum</i> , Hall ? 1861 .....                                          | 191     |
| <i>L. approximatum</i> , n. s., Walcott, 1884, pl. vi, fig. 7 .....                    | 191-192 |
| <i>Loxonema ?</i> sp. undt., Walcott, 1884 .....                                       | 192     |
| <i>Loxonema</i> , sp. undt., Walcott, 1884 .....                                       | 192     |
| <i>Bellerophon</i> , Montfort .....                                                    | 192     |
| <i>B. perplexa</i> , n. s., Walcott, 1884, pl. xvii, figs. 6, 6 a, b .....             | 193     |
| <i>B. combsi</i> , n. s., Walcott, 1884, pl. xvii, figs. 9, 9 a, b .....               | 193-194 |
| <i>B. lyra</i> , Hall .....                                                            | 194     |
| <i>B. leda</i> , Hall .....                                                            | 194     |
| <i>B. macra</i> , Hall ? .....                                                         | 194     |
| <i>B. pelops</i> , Hall ? .....                                                        | 194     |
| <i>Scoliotoma</i> , Braun .....                                                        | 195     |
| <i>S. americana</i> , n. s., Walcott, 1884, pl. vi, figs. 1, 1 a-c .....               | 195     |
| <i>Metoptoma</i> , Phillips .....                                                      | 195     |
| <i>M. ? devonica</i> , n. s., Walcott, 1884, pl. xvii, figs. 2, 2 a .....              | 195-196 |
| <i>Pteropoda.</i>                                                                      |         |
| <i>Tentaculites</i> , Schlotheim .....                                                 | 196     |
| <i>T. gracilistriatus</i> , Hall .....                                                 | 196-197 |
| <i>T. scalariformis</i> , Hall .....                                                   | 197     |
| <i>T. attenuatus</i> , Hall .....                                                      | 197     |
| <i>T. bellulus</i> , Hall ? .....                                                      | 197     |
| <i>Styliola</i> , Le Sueur .....                                                       | 197     |
| <i>S. fissurella</i> , Hall .....                                                      | 197     |
| <i>S. fissurella</i> var. <i>intermittens</i> , Hall .....                             | 197-198 |
| <i>Conularia</i> , Miller .....                                                        | 198     |
| <i>Conularia</i> , sp. undt., Walcott, 1884 .....                                      | 198     |
| <i>Hyolithes</i> , Eichwald .....                                                      | 199     |
| <i>Hyolithes</i> , sp. (?), Walcott, 1884, pl. vi, figs. 8, 8 a .....                  | 199     |
| <i>Coleolus</i> , Hall .....                                                           | 199     |
| <i>C. laevis</i> , n. s., Walcott, 1884, pl. vi, fig. 9 .....                          | 199-200 |
| <i>Cephalopoda.</i>                                                                    |         |
| <i>Orthoceras</i> , Breynius .....                                                     | 200-202 |
| <i>Gomphoceras</i> , Sowerby .....                                                     | 202     |
| <i>G. suboviforme</i> , n. s., Walcott, 1884, pl. xvii, figs. 8, 8 a .....             | 202-203 |
| <i>Cyrtoceras</i> , Goldfuss .....                                                     | 203     |
| <i>C. nevadense</i> , n. s., Walcott, 1884, pl. xvii, figs. 7, 7 a .....               | 203     |
| <i>Goniatites</i> , De Haan .....                                                      | 203     |
| <i>G. desideratus</i> , n. s., Walcott, 1884, pl. xvii, fig. 10 .....                  | 203-204 |
| <i>Crustacea.</i>                                                                      |         |
| <i>Beyrichia</i> , McCoy .....                                                         | 204     |
| <i>B. (Primitia) occidentalis</i> , n. s., Walcott, 1884, pl. xvii, figs. 4, 4 a ..... | 204-206 |
| <i>Lepiditia</i> , Rouault .....                                                       | 206     |
| <i>L. rotundata</i> , n. s., Walcott, 1884, pl. xvi, fig. 5 .....                      | 206     |
| <i>Pæcilopoda.</i>                                                                     |         |
| <i>Phacops</i> , Emmerich .....                                                        | 207     |
| <i>P. rana</i> , Green, sp., 1832 .....                                                | 207     |
| <i>Dalmanites</i> , Emmerich .....                                                     | 207     |
| <i>D. neeki</i> , n. s., Walcott, 1884, pl. xvii, figs. 5, 5 a-c .....                 | 207-209 |
| <i>Dalmanites</i> , undt. sp., Walcott, 1884 .....                                     | 210     |
| <i>Præetus</i> , Steininger .....                                                      | 210     |

|                                                                                               | Page.   |
|-----------------------------------------------------------------------------------------------|---------|
| <i>P. haldemani</i> , Hall, 1861 .....                                                        | 210     |
| <i>P. marginalis</i> , Conrad, sp., 1839 .....                                                | 210-211 |
| <i>Phillipsia</i> , Portlock .....                                                            | 211     |
| <i>P. coronata</i> , Hall? 1876 .....                                                         | 211     |
| Supposed eggs of the Trilobite .....                                                          | 211     |
| FOSSILS OF THE CARBONIFEROUS.                                                                 |         |
| <i>Echinodermata.</i>                                                                         |         |
| <i>Archæocidaris</i> , McCoy .....                                                            | 212     |
| <i>Archæocidaris</i> , sp., † Walcott, 1884 .....                                             | 212-213 |
| <i>Brachiopoda.</i>                                                                           |         |
| <i>Discina</i> , Lamarck .....                                                                | 213     |
| <i>D. newberryi</i> , Hall, 1863, pl. xviii, figs. 3, 2, 2 a? .....                           | 213     |
| <i>D. nitida</i> , Phillips, 1836, pl. vii, figs. 4, 4 a .....                                | 213-214 |
| <i>D. connata</i> , n. s., Walcott, 1884, pl. vii, fig. 3, 3 a .....                          | 214     |
| <i>Productus</i> , Sowerby .....                                                              | 214     |
| <i>P. subaculeatus</i> , Murch., pl. vii, fig. 2 .....                                        | 214-215 |
| <i>Spirifer</i> , Sowerby .....                                                               | 215     |
| <i>S. trigonalis</i> , Martin, sp., 1809, pl. xviii, fig. 11 .....                            | 215-216 |
| <i>S. leidy</i> , N. & P., 1855, pl. xviii, figs. 4, 4 a .....                                | 216     |
| <i>S. annectans</i> , n. s., Walcott, 1884, pl. xviii, figs. 7, 7 a .....                     | 216-217 |
| <i>S. neglecta</i> , Hall, 1858, pl. xviii, fig. 10 .....                                     | 217     |
| <i>S. desiderata</i> , n. s., Walcott, 1884, pl. vii, fig. 8 .....                            | 217-218 |
| Subgenus <i>Spiriferina</i> , D'Orbigny .....                                                 | 218     |
| <i>S. (Spiriferina) cristata</i> , Schlottheim, 1816, pl. xviii, figs. 12, 13 .....           | 218-219 |
| <i>Syringothyris</i> , Winchell .....                                                         | 219     |
| <i>S. cuspidata</i> , Martin, sp., 1796 .....                                                 | 219-220 |
| <i>Retzia</i> , King .....                                                                    | 220     |
| <i>R. radialis</i> , Phillips, sp., 1836, pl. vii, figs. 5, 5 a-h .....                       | 220-222 |
| <i>Athyris</i> , McCoy .....                                                                  | 222     |
| <i>A. hirsuta</i> , Hall, 1857, pl. xviii, fig. 5 .....                                       | 222     |
| <i>Rhynchonella</i> , Fischer .....                                                           | 222     |
| <i>R. eurekaensis</i> , n. s., Walcott, 1884, pl. xviii, figs. 8, 8 a-c .....                 | 222     |
| <i>R. thera</i> , n. s., Walcott, 1884, pl. vii, figs. 6, 6 a-c .....                         | 222-224 |
| <i>Camarophoria</i> , King .....                                                              | 224     |
| <i>C. cooperensis</i> , Shumard, 1855, pl. xviii, fig. 6 .....                                | 224     |
| <i>Terebratula</i> , Lhwyd .....                                                              | 224     |
| <i>T. hastata</i> , Sowerby .....                                                             | 224     |
| <i>Lamellibranchiata.</i>                                                                     |         |
| <i>Aviculopecten</i> , McCoy .....                                                            | 226     |
| <i>A. hagueti</i> , n. s., Walcott, 1884, pl. xix, fig. 4 .....                               | 226-227 |
| <i>A. eurekaensis</i> , n. s., Walcott, 1884, pl. xix, figs. 2, 3 .....                       | 227     |
| <i>A. peroccidens</i> , n. s., Walcott, 1884, pl. viii, fig. 8 .....                          | 227-228 |
| <i>A. pintoensis</i> , n. s., Walcott, 1884, pl. viii, fig. 6 .....                           | 228     |
| <i>A. affinis</i> , n. s., Walcott, 1884, pl. xix, figs. 1, 1 a .....                         | 228-229 |
| <i>Aviculopecten</i> , sp. † Walcott, 1884 .....                                              | 229     |
| <i>Streblopecter</i> , McCoy .....                                                            | 229     |
| <i>S. similis</i> , n. s., Walcott, 1884, pl. viii, figs. 4, 4 a-d, and pl. xix, fig. 7 ..... | 229-231 |
| <i>Crenipecten</i> , Hall .....                                                               | 231     |
| <i>C. hallanus</i> , n. s., Walcott, 1884, pl. viii, figs. 7, 7 a-c .....                     | 231-232 |
| <i>Pterinopecten</i> , Hall .....                                                             | 232     |
| <i>P. hoosacensis</i> , n. s., Walcott, 1884, pl. viii, fig. 9 .....                          | 232-233 |
| <i>P. spio</i> , n. s., Walcott, 1884, pl. viii, figs. 1, 1 a .....                           | 233     |
| <i>Pterinea</i> , Goldfuss .....                                                              | 234     |
| <i>P. pintoensis</i> , n. s., Walcott, 1884, pl. xix, fig. 10 .....                           | 234     |
| <i>Leptodesma</i> , Hall .....                                                                | 234     |
| <i>Leptodesma</i> , sp. † Walcott, 1884 .....                                                 | 234     |
| <i>Ptychopecter</i> , Hall .....                                                              | 235     |
| <i>P. protoforme</i> , n. s., Walcott, 1884, pl. viii, fig. 5 .....                           | 235     |
| <i>Pinna</i> , Linnaeus .....                                                                 | 235     |
| <i>P. inexpectans</i> , n. s., Walcott, 1884, pl. xix, fig. 11 .....                          | 235-236 |
| <i>P. consimilis</i> , n. s., Walcott, 1884, pl. xx, fig. 13 .....                            | 236     |
| <i>Myalina</i> , De Koninck .....                                                             | 237     |
| <i>M. congeneris</i> , n. s., Walcott, 1884, pl. xix, fig. 6, and pl. xxii, fig. 10 .....     | 237     |
| <i>M. nemesis</i> , n. s., Walcott, 1884, pl. xix, fig. 5, and pl. xxii, fig. 7 .....         | 237-238 |
| <i>M. nesusus</i> , n. s., Walcott, 1884, pl. xxii, figs. 8, 8 a .....                        | 238     |



|                                                                                                                  | Page.   |
|------------------------------------------------------------------------------------------------------------------|---------|
| <i>Modiola</i> , Lamarek .....                                                                                   | 239     |
| <i>M. ? nevadensis</i> , n. s., Walcott, 1884, pl. xix, fig. 8 .....                                             | 239     |
| <i>Modiomorpha</i> , Hall .....                                                                                  | 239     |
| <i>M. ambigua</i> , n. s., Walcott, 1884, pl. xx, fig. 1 .....                                                   | 239-240 |
| <i>M. ? desiderata</i> , n. s., Walcott, 1884, pl. xx, fig. 3 .....                                              | 240     |
| <i>M. ? pintoensis</i> , n. s., Walcott, 1884, pl. xx, fig. 2 .....                                              | 240-241 |
| <i>Nucula</i> , Lamarek .....                                                                                    | 241     |
| <i>N. insularis</i> , n. s., Walcott, 1884, pl. xx, fig. 14 .....                                                | 240     |
| <i>N. levatiforme</i> , n. s., Walcott, 1884, pl. xxii, figs. 1, 1 a .....                                       | 241-242 |
| <i>Solenomya</i> , Lamarek .....                                                                                 | 242     |
| <i>S. curta</i> , n. s., Walcott, 1884, pl. xxii, figs. 6, 11 .....                                              | 242     |
| <i>Macrodon</i> , Lyeett .....                                                                                   | 243     |
| <i>M. hamiltonae</i> , Hall, 1870, pl. xxiii, figs. 5, 5 a-c .....                                               | 243     |
| <i>M. truncatus</i> , n. s., Walcott, 1884, pl. viii, fig. 2 .....                                               | 243-244 |
| <i>Grammysia</i> , De Verneuil .....                                                                             | 244     |
| <i>G. hannibalensis</i> , Shumard, sp., 1855, pl. xx, fig. 4 .....                                               | 244     |
| <i>G. arcuata</i> , Conrad, sp., 1841, pl. xx, fig. 5 .....                                                      | 245     |
| <i>Edmondia</i> , De Koninck .....                                                                               | 245     |
| <i>E. medon</i> , n. s., Walcott, 1884, pl. xxiii, fig. 6 .....                                                  | 245     |
| <i>E. ? circularis</i> , n. s., Walcott, 1884, pl. xxii, fig. 9 .....                                            | 246     |
| <i>Pleurophorus</i> , King .....                                                                                 | 246     |
| <i>P. meeki</i> , n. s., Walcott, 1884, pl. viii, fig. 3 .....                                                   | 246     |
| <i>Sanguinolites</i> , McCoy .....                                                                               | 247     |
| <i>S. aolus</i> , H. & W., 1870, pl. xx, figs. 6, 7, 9 .....                                                     | 247     |
| <i>S. retusus</i> , n. s., Walcott, 1884, pl. xx, fig. 10 .....                                                  | 247-248 |
| <i>S. simplex</i> , n. s., Walcott, 1884, pl. xx, fig. 11 .....                                                  | 248     |
| <i>S. salteri</i> , n. s., Walcott, 1884, pl. xx, fig. 12 .....                                                  | 248-249 |
| <i>S. ? naenia</i> , n. s., Walcott, 1884, pl. xix, fig. 9 .....                                                 | 249     |
| <i>S. striatus</i> , n. s., Walcott, 1884, pl. xxiii, fig. 7 .....                                               | 249-250 |
| <i>Microdon</i> , Conrad .....                                                                                   | 250     |
| Subgenus <i>Cypricardella</i> , Hall .....                                                                       | 250     |
| <i>M. (Cypricardella) connatus</i> , n. s., Walcott, 1884, pl. xxiv, figs. 5, 5 a .....                          | 250-251 |
| <i>Cardiola</i> , Broderip .....                                                                                 | 251     |
| <i>C. ? filicostata</i> , n. s., Walcott, 1884, pl. xxii, figs. 4, 4 a .....                                     | 251     |
| <i>Schizodus</i> , King .....                                                                                    | 252     |
| <i>S. cuneatus</i> , Meek, 1875, pl. xx, fig. 8 .....                                                            | 252     |
| <i>S. deparcus</i> , n. s., Walcott, 1884, pl. xxii, fig. 5 .....                                                | 252     |
| <i>S. curtiforme</i> , n. s., Walcott, 1884, pl. xxii, figs. 3, 3 a .....                                        | 253     |
| <i>S. pintoensis</i> , n. s., Walcott, 1884, pl. xxii, figs. 2, 2 a .....                                        | 253-254 |
| <i>Gasteropoda.</i>                                                                                              |         |
| <i>Platyceras</i> , Conrad .....                                                                                 | 254     |
| <i>P. occidens</i> , n. s., Walcott, 1884, pl. xxiv, figs. 9, 9 a .....                                          | 254     |
| <i>P. piao</i> , n. s., Walcott, 1884, pl. xxiv, figs. 7, 7 a, b .....                                           | 254-255 |
| <i>Platyostoma</i> , Conrad .....                                                                                | 255     |
| <i>P. inornatum</i> , n. s., Walcott, 1884, pl. xxiv, figs. 3, 3 a .....                                         | 255     |
| <i>Euomphalus</i> , Sowerby .....                                                                                | 255     |
| <i>E. (Strapnollus) subrugosus</i> , M. & W., 1873, pl. xviii, fig. 19 .....                                     | 255-256 |
| <i>Bellerophon</i> , Montfort .....                                                                              | 256     |
| <i>B. majusculus</i> , n. s., Walcott, 1884, pl. xxiii, figs. 1, 1 a; pl. xxiv, fig. 6, and fig. 3, p. 257 ..... | 256-257 |
| <i>B. textilis</i> , Hall, ? 1877, pl. xviii, fig. 18 .....                                                      | 257-258 |
| <i>Lozonema</i> , Phillips .....                                                                                 | 258     |
| <i>L. bella</i> , n. s., Walcott, 1884, pl. xxiv, figs. 1, 1 a .....                                             | 258-259 |
| <i>Pleuromaria</i> , DeFrance .....                                                                              | 259     |
| <i>P. nodomarginata</i> , McChesney, 1860, pl. xviii, fig. 15 .....                                              | 259     |
| <i>P. nevadensis</i> , n. s., Walcott, 1884, pl. xxiv, figs. 2, 2 a .....                                        | 259-260 |
| <i>Macrocheilus</i> , Phillips .....                                                                             | 260     |
| <i>Macrocheilus</i> , sp., ? Walcott, 1884, pl. xxiv, fig. 8 .....                                               | 260     |
| <i>Metoptoma</i> , Phillips .....                                                                                | 260     |
| <i>M. peroccidens</i> , n. s., Walcott, 1884, pl. xviii, fig. 16 .....                                           | 260     |
| <i>Ampullaria</i> , Lamarek .....                                                                                | 261     |
| <i>A. ? powelli</i> , Walcott, 1883, figs. 4, 5, p. 261 .....                                                    | 261     |
| <i>Pulmonifera.</i>                                                                                              |         |
| <i>Physa</i> , Draparnaud .....                                                                                  | 262     |
| <i>P. prisca</i> , Walcott, 1883, fig. 6, p. 262 .....                                                           | 262     |
| <i>Zaptychius</i> , Walcott, 1883 .....                                                                          | 263     |
| <i>Z. carbonaria</i> , Walcott, 1883, fig. 7, p. 263 .....                                                       | 263     |

|                                                                            | Page.   |
|----------------------------------------------------------------------------|---------|
| <i>Pteropoda.</i>                                                          |         |
| <i>Conularia</i> , Miller .....                                            | 264     |
| <i>C. missouriensis</i> , Swallow, † 1860, pl. xxiii, fig. 4 .....         | 264     |
| <i>Hyolithes</i> , Eichwald .....                                          | 264     |
| <i>H. carbonaria</i> , n. s., Walcott, 1884, pl. xxiii, fig. 3 .....       | 264     |
| <i>Cephalopoda.</i>                                                        |         |
| <i>Orthoceras</i> , Breynius .....                                         | 265     |
| <i>O. randolphensis</i> , Worthen, † 1882, pl. xviii, fig. 17 .....        | 265     |
| <i>O. eurekensis</i> , n. s., Walcott, 1884, pl. xxiii, figs. 2, 2 a ..... | 265-266 |
| <i>Orthoceras</i> , sp., † Walcott, 1884 .....                             | 265     |
| <i>Pæcilopoda.</i>                                                         |         |
| <i>Griffithides</i> , Portlock .....                                       | 266     |
| <i>G. portlocki</i> , M. & W., 1865, pl. xxiv, figs. 4, 4 a, b .....       | 266-267 |
| Systematic list of fossils of each geologic formation .....                | 266-281 |
| Paleozoic section in Central Nevada .....                                  | 281-285 |

## 24.

WALCOTT, C. D.—On the Cambrian Faunas of North America; Preliminary studies.  
 <Bull. U. S. Geol. Surv. No. 10, pp. 1-74, pl. i-x. Washington, 1884.

This contains three parts. The first is a "Review of the fauna of the Saint John formation, contained in the Hartt collection." Mr. Matthew proposed the specific names for the new species excepting for one, *Harttia matthewi*, the type of the n. g. *Harttia*, Walcott. The author does not accept the genus *Conocephalites* and refers its different species to some of *Psychoparia* and one of *Conocoryphe*. The following species are mentioned:

|                                                                                                 | Page.          |
|-------------------------------------------------------------------------------------------------|----------------|
| <i>Eocystites</i> , Billings .....                                                              | 14, 294        |
| <i>E. primævus</i> , Billings, 1868, pl. i, fig. 2 .....                                        | 14-15, 294-295 |
| <i>Lingula</i> , Bruguière .....                                                                | 15, 295        |
| <i>L. ? dawsoni</i> , n. s., Matthew, MSS., 1884, pl. v, fig. 8 .....                           | 15, 295        |
| <i>Acrothoe</i> , Linnarson .....                                                               | 15, 295        |
| <i>A. matthewi</i> , Hartt, sp., 1868, pl. i, figs. 4, 4 a .....                                | 15-16, 295-296 |
| <i>Obolella</i> , Billings .....                                                                | 16, 296        |
| <i>O. transversa</i> , Hartt, 1868, pl. i, figs. 5, 5 a .....                                   | 16, 296        |
| <i>Obolella</i> , sp., undt., Walcott, 1884 .....                                               | 16-17, 296-297 |
| <i>Orthis</i> , Dalman .....                                                                    | 17, 297        |
| <i>O. billingsi</i> , Hartt, 1868, pl. i, figs. 1, 1 b-d .....                                  | 17-18, 297-298 |
| <i>Orthis</i> , † sp., Walcott, 1884, pl. i, fig. 1 a .....                                     | 18, 298        |
| <i>Harttia</i> , n. g., Walcott, 1884 .....                                                     | 18-19, 298-299 |
| <i>H. matthewi</i> , n. s., Walcott, 1884, pl. i, fig. 3 .....                                  | 19, 299        |
| <i>Palaæmea</i> , H. and W. ( <i>Stenotheca</i> ) .....                                         | 19, 299        |
| <i>Stenotheca acedica</i> , Hartt, sp., 1868, pl. i, fig. 6 .....                               | 19, 299        |
| <i>Hyolithes</i> , Eichwald .....                                                               | 20, 300        |
| <i>H. acedica</i> , n. s., Hartt, sp., MSS., 1884, pl. ii, fig. 5 .....                         | 20, 300        |
| <i>H. danianus</i> , n. s., Matthew, MSS., 1884, pl. ii, figs. 7 a, b .....                     | 20-21, 300-301 |
| <i>H. micnas</i> , n. s., Matthew, MSS., 1884, pl. ii, fig. 6 .....                             | 21-22, 301-302 |
| <i>Agnostus</i> , Brongniart .....                                                              | 22, 302        |
| <i>A. acedicus</i> , Hartt, 1868, pl. ii, figs. 2, 2 a-c .....                                  | 22-23, 302-303 |
| <i>Microdiscus</i> , Emmons .....                                                               | 23, 303        |
| <i>M. dawsoni</i> , Hartt, 1868, pl. ii, figs. 3, 3 a .....                                     | 23, 303        |
| <i>M. punctatus</i> , Salter, 1864, pl. ii, figs. 1, 1 a-c .....                                | 24-25, 303-304 |
| <i>Paradozites</i> , Brongniart .....                                                           | 25, 305        |
| <i>P. lamellatus</i> , Hartt, 1868, pl. iii, figs. 2, 2 a .....                                 | 25, 305        |
| <i>P. acedicus</i> , Matthew, 1882, pl. iii, figs. 3, 3 a .....                                 | 25-27, 305-307 |
| <i>P. stemmatus</i> , Matthew, 1883, pl. iii, figs. 1, 1 a-g .....                              | 27, 307        |
| <i>Conocoryphe</i> , Corda .....                                                                | 28, 308        |
| <i>C. (Bubgenus?) matthewi</i> , Hartt, sp., 1868, pl. iv, figs. 1, 1 a, b .....                | 28-30, 308-310 |
| <i>C. watouiti</i> , Matthew (in lit.), 1884 .....                                              | 30-31, 310-311 |
| <i>Hadiella</i> (new subgenus), Matthew, 1884 .....                                             | 31-32, 311-312 |
| <i>C. (Hadiella) bairdi</i> , Hartt, sp., 1868, pl. iv, figs. 3, 3 a; pl. v, figs. 7, 7 a ..... | 32-33, 312-313 |
| <i>C. elegans</i> , Hartt, sp., 1868, pl. iv, figs. 2, 2 a, b .....                             | 33-34, 313-314 |
| <i>Psychoparia</i> , Corda .....                                                                | 34-36, 314-316 |
| <i>P. rubbi</i> , Hartt, sp., 1868, pl. v, figs. 1, 1 a .....                                   | 36-37, 316-317 |
| <i>P. cuanquandiana</i> , Hartt, sp., 1868, pl. v, figs. 4, 4 a-f .....                         | 37-38, 317-318 |



|                                                                                  | Page.          |
|----------------------------------------------------------------------------------|----------------|
| <i>P. ouangondiana</i> var. <i>aurora</i> , Hartt, sp., 1868, pl. v, fig. 5..... | 38-39, 318-319 |
| <i>P. quadrata</i> , Hartt, sp., 1868, pl. v, fig. 1.....                        | 39, 319        |
| <i>P. orestes</i> , Hartt, sp., 1868, pl. v, figs. 3, 3 a.....                   | 39-40, 319-320 |
| <i>P. orestes</i> var. <i>therites</i> , Hartt, sp., 1868, pl. v, fig. 2.....    | 40-41, 320-321 |
| <i>P. tener</i> , Hartt, sp., 1868, pl. v, figs. 6, 6 a, b.....                  | 41-42, 321-322 |

The second part is on the "Fauna of the Braintree argillites." The author doubts the specific difference between *Paradoxides harlani* and *P. benetti*. He describes the following forms:

|                                                                                                 | Page.          |
|-------------------------------------------------------------------------------------------------|----------------|
| <i>Hyolithes</i> , Eichwald.....                                                                | 44, 324        |
| <i>H. shaleri</i> , n. s., Walcott, 1884, pl. vii, figs. 4, 4 a-c.....                          | 44-45, 324-325 |
| <i>Paradoxides</i> , Brongniart.....                                                            | 45, 325        |
| <i>P. harlani</i> , Green, 1834, pl. vii, fig. 3; pl. viii, figs. 1, 1 a-c; pl. ix, fig. 1..... | 45-47, 325-327 |
| <i>Ptychoparia</i> , Corda.....                                                                 | 47, 327        |
| <i>P. rogersi</i> , n. s., Walcott, 1884, pl. vii, fig. 2.....                                  | 47-48, 327-328 |
| <i>Agraulos</i> , Corda.....                                                                    | 48, 328        |
| <i>A. quadrangularis</i> , Whitfield, sp., 1884, pl. vii, fig. 1.....                           | 48-49, 328-329 |

The third part is "On a new genus and species of Phyllopoda from the middle Cambrian."

|                                                             | Page.          |
|-------------------------------------------------------------|----------------|
| <i>Protocaris</i> , n. g., Walcott, 1884.....               | 50, 330        |
| <i>P. marshi</i> , n. s., Walcott, 1884, pl. x, fig. 1..... | 50-51, 350-351 |

25.

WALCOTT, C. D. Paleontologic Notes. < Amer. Jour. Sci., 3d ser., vol. xxix, February, pp. 114-117, pl. on p. 116. New Haven, 1885.

OBOLIDÆ.

|                                                                       | Page |
|-----------------------------------------------------------------------|------|
| <i>Linnarssonina</i> , n. g., Walcott, 1885.....                      | 115  |
| <i>Obolella chromatica</i> , figs. 1, 2, p. 116.....                  | 116  |
| <i>Linnarssonina transversa</i> , Hartt, sp., figs. 3, 4, p. 116..... | 116  |
| <i>L. vagittatis</i> , figs. 5-8, p. 116.....                         | 116  |
| <i>L. transversa</i> , figs. 6, 7, p. 116.....                        | 116  |

26.

WALCOTT, C. D. Paleozoic Notes; New Genus of Cambrian Trilobites, *Mesonacis*. < Amer. Jour. Sci., 3d ser., vol. xxix, April, pp. 328-330, figs. 2. New Haven, 1885.

|                                                                  | Page.   |
|------------------------------------------------------------------|---------|
| <i>Mesonacis</i> , n. g., Walcott, 1885, figs. 1, 2, p. 329..... | 328-330 |

27.

WALCOTT, C. D. Note on some Paleozoic Pteropods. < Amer. Journ. Sci., 3d ser., vol. xxx, July, pp. 17-21, figs. 1-6. New Haven, 1885.

|                                                                             | Page. |
|-----------------------------------------------------------------------------|-------|
| <i>Matthevia</i> , n. g., Walcott, 1885.....                                | 17-18 |
| <i>M. variabilis</i> , n. s., Walcott, 1885, figs. 1-6, p. 20.....          | 18-19 |
| Note on <i>Hyolithes</i> ( <i>Camarotheca</i> ) <i>emmonsii</i> , Ford..... | 19-21 |





---

## PART IV.

---

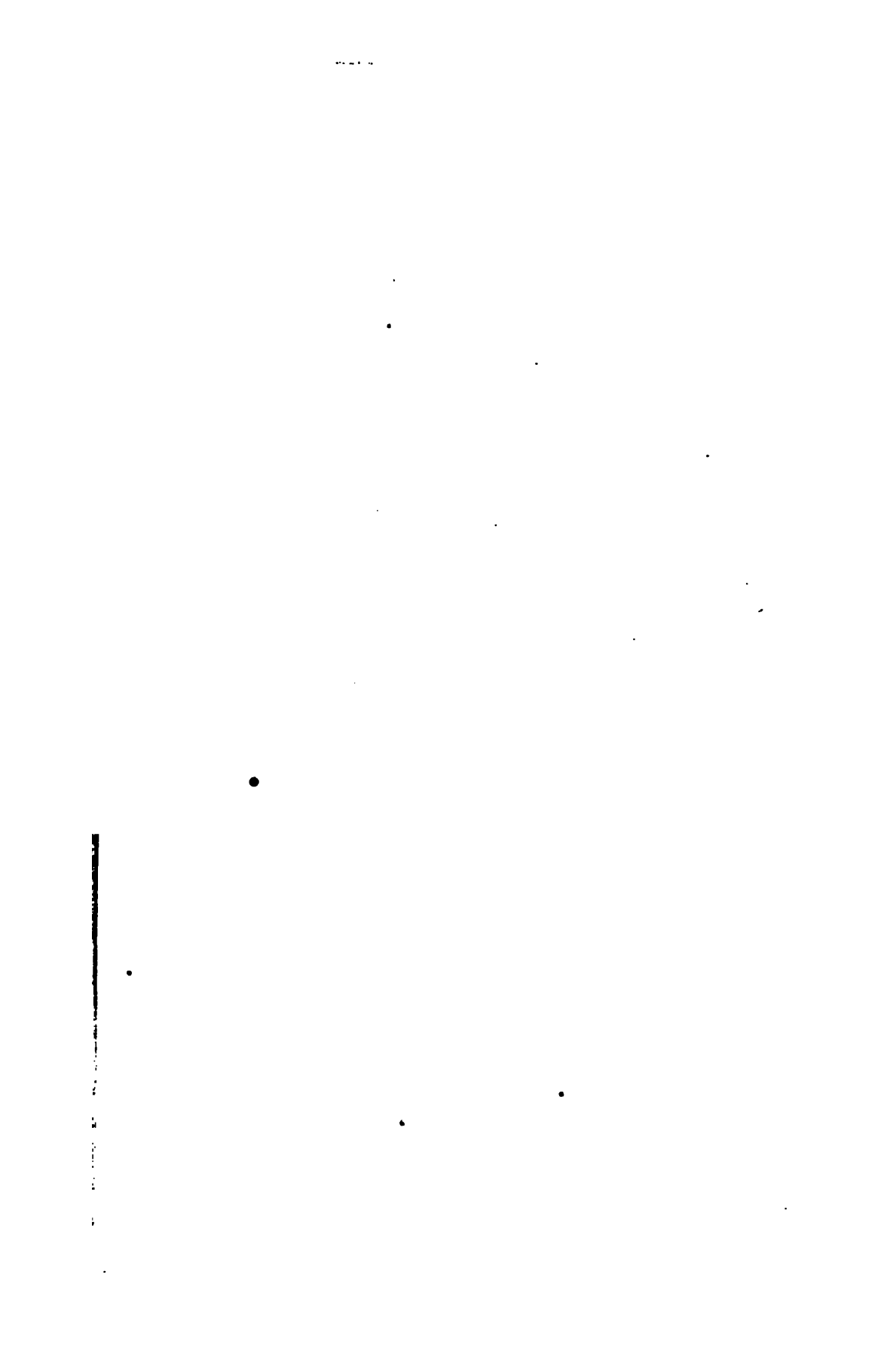
### PUBLICATIONS BASED UPON THE PALEONTOLOGICAL COLLECTIONS OF THE UNITED STATES GOVERNMENT

BY

JOSEPH WHITMAN BAILEY,  
JETHRO ABBOTT CONRAD,  
LESLIE DWIGHT DANA,  
CHRISTIAN GOTTFRIED EHRENBERG,  
LESLIE HALL,  
EUGENE HEILPRIN,  
LESLIE HYATT,  
LESLIE MARCOU,

JOHN STRONG NEWBERRY,  
I. N. NICOLLET,  
DAVID DALE OWEN,  
HIRAM A. PROUT,  
JAMES SCHIEL.  
BENJAMIN F. SHUMARD,  
ROBERT PARR WHITFIELD.

•





# I.—THE WRITINGS OF JACOB WHITMAN BAILEY.

## 1.

BAILEY, J. W. [Descriptions of fossil fresh-water infusoria from Oregon.] <Rep.  
Expl. Exp. to the Rocky Mountains and to Oregon and North California, by J.  
C. Frémont. Appendix A. Geological formations by James Hall, p. 302, pl. v.  
Washington, 1845.

|                                                                                       | Page. |
|---------------------------------------------------------------------------------------|-------|
| <i>Eunotia librile</i> , Ehrenberg, pl. v, figs. 1, 2, 3 .....                        | 302   |
| <i>Eunotia gibba</i> , Ehr., pl. v, figs. 4, 5 .....                                  | 302   |
| <i>Pinnularia pachyptera</i> ?, Ehr., pl. v, figs. 6 .....                            | 302   |
| <i>Cocconeis cymbiforme</i> ?, Ehr., pl. v, figs. 7, 8, 9 .....                       | 302   |
| <i>Gomphonema clavatum</i> ?, Ehr., pl. v, figs. 10, 11 .....                         | 302   |
| <i>Gomphonema minutissimum</i> , Ehr., pl. v, fig. 12 .....                           | 302   |
| <i>Gallionella</i> ——, n. s., J. W. Bailey, 1845, pl. v, figs. 13, 14, 15 .....       | 302   |
| <i>Gallionella distans</i> ?, J. W. Bailey, pl. v, fig. 16 .....                      | 302   |
| <i>Cocconeis preatexta</i> , Ehr., pl. v, figs. 17, 18 .....                          | 302   |
| <i>Fragillaria</i> , J. W. Bailey, 1845, pl. v, fig. 19 .....                         | 302   |
| <i>Surirella</i> , J. W. Bailey, 1845, pl. v, fig. 20 .....                           | 302   |
| <i>Fragillaria rhabdosoma</i> ?, J. W. Bailey, 1845, pl. v, fig. 21 .....             | 302   |
| Spiculae of fresh-water sponges, pl. v, figs. 22, 23 .....                            | 302   |
| ——?, pl. v, fig. 24 .....                                                             | 302   |
| Scale = 10-100ths of millimeter magnified equally with drawings, pl. v, fig. 25 ..... | 302   |

## 2.

BAILEY, J. W. Letter upon Infusorial Fossils submitted to him by Dr. Schiel. <Rep.  
Expls. and Survs. from the Mississippi River to the Pacific Ocean. Report of  
Expls. for a route for the Pacific Railroad of the line of the forty-first parallel  
of north latitude, by Lieut. E. G. Beckwith, 1854. Vol. ii, chap. x, pp. 111, 112,  
pl. iii (pars.). Washington, 1855.

|                                                                                               | Page. |
|-----------------------------------------------------------------------------------------------|-------|
| <i>Epithemia</i> , pl. iii, figs. 5, 6 .....                                                  | 111   |
| <i>Cocconeis asperum</i> , Ehr .....                                                          | 111   |
| <i>Cocconeis cymbiforme</i> , Ehr .....                                                       | 111   |
| <i>Discoplea atmospherica</i> , Ehr .....                                                     | 111   |
| <i>Surirella campylodiscus</i> ?, Ehr., pl. iii, fig. 4 .....                                 | 111   |
| <i>Cocconeis</i> , pl. iii, fig. 3 .....                                                      | 111   |
| <i>Cymbella gibba</i> , n. s., Bailey, 1855, pl. iii, fig. 1 .....                            | 111   |
| <i>Cymatopleura</i> ? <i>campylodiscus</i> , n. s., Bailey, 1855, pl. iii, figs. 2 a, b ..... | 111   |
| <i>Galleinella</i> , pl. iii, figs. 7 a, b .....                                              | 112   |
| <i>Galleinella varians</i> .....                                                              | 112   |
| <i>Stephanodiscus</i> ——? .....                                                               | 112   |
| <i>Pennularia nobilis</i> , Ehr. ....                                                         | 112   |
| <i>Pennularia viridis</i> .....                                                               | 112   |
| <i>Epithemia</i> .....                                                                        | 112   |
| <i>Surirella splendida</i> (? Ehr.) .....                                                     | 112   |
| Pollen of pine .....                                                                          | 112   |
| <i>Spongiolites</i> .....                                                                     | 112   |

•

•

•

•

•

•

•

## II.—THE WRITINGS OF TIMOTHY ABBOTT CONRAD.

### 1.

CONRAD, T. A. Observations on a portion of the Atlantic Tertiary region, with a description of New Species of organic remains. <2d Bull. Proc. Natl. Institution, pp. 171-194, pls. i and ii. Washington, 1842.

|                                                                  | Page.   |
|------------------------------------------------------------------|---------|
| Section of the cliff at Claiborne.....                           | 174     |
| Classification of Tertiary formations.....                       | 176     |
| Table of Atlantic supracretaceous deposits.....                  | 177     |
| Geographical range of Lower Tertiary.....                        | 178     |
| Geographical range of Medial Tertiary.....                       | 179     |
| Localities of the Upper Tertiary.....                            | 176     |
| Medial Tertiary period.....                                      | 180     |
| Section at Fair Haven.....                                       | 181     |
| List of species obtained.....                                    | 181-182 |
| (Section) Cliff near Beckett's.....                              | 182     |
| (List of fossils).....                                           | 185     |
| (Section) Saint Mary's River.....                                | 185     |
| Organic remains found on Saint Mary's River.....                 | 186-187 |
| Post-Pliocene period.....                                        | 187     |
| Upper Tertiary formation.....                                    | 187     |
| (Sections near Patuxent River).....                              | 188     |
| Section near the mouth of Potomac.....                           | 189     |
| (List of species).....                                           | 190     |
| List of Fossil shells at Benner's.....                           | 191-192 |
| Descriptions of new Tertiary fossils.....                        | 192     |
| Lower Tertiary or Eocene fossils.....                            | 192     |
| <i>Ostrea</i> , Linnæus.....                                     | 192     |
| <i>O. selceformis</i> , n. s., Conrad, 1842, pl. i, fig. 1.....  | 192-193 |
| <i>Pholadomya</i> .....                                          | 193     |
| <i>P. marylandica</i> , n. s., Conrad, 1842, pl. i, fig. 3.....  | 193     |
| <i>Pholas</i> .....                                              | 193     |
| <i>P. petrosa</i> , n. s., Conrad, 1842, pl. ii, fig. 4.....     | 193     |
| <i>Isocardia</i> , Lamarck.....                                  | 193     |
| <i>I. markozi</i> , n. s., Conrad, 1842, pl. ii, fig. 1.....     | 193     |
| <i>Pecten</i> , Lamarck.....                                     | 194     |
| <i>P. humphreysii</i> , n. s., Conrad, 1842, pl. ii, fig. 2..... | 194     |
| <i>Diepotaxa</i> , Say.....                                      | 194     |
| <i>D. constricta</i> , n. s., Conrad, 1842, pl. i, fig. 2.....   | 194     |
| <i>Scalaria</i> , Lamarck.....                                   | 194     |
| <i>S. expansa</i> , n. s., Conrad, 1842, pl. ii, fig. 3.....     | 194     |
| <i>Buccinum</i> , Lamarck.....                                   | 194     |
| <i>B. integrum</i> , n. s., Conrad, 1842, pl. ii, fig. 5.....    | 194     |
| <i>Scutella</i> , Lamarck.....                                   | 194     |
| <i>S. aberti</i> , n. s., Conrad, 1842.....                      | 194     |

### 2.

CONRAD, T. A. [Descriptions of the fossil shells of Astoria, Oregon.] <U. S. Expl. Exp. under the command of Charles Wilkes, vol. x, Geology, Appendix i, pp. 723-728, pls. xvii-xxi. Philadelphia, 1849.

|                                                                               | Page. |
|-------------------------------------------------------------------------------|-------|
| <i>Mya abrupta</i> , n. s., Conrad, 1849, pl. xvii, figs. 5, 5 a.....         | 723   |
| <i>Thracia trapezoides</i> , n. s., Conrad, 1849, pl. xvii, figs. 6 a, b..... | 723   |
| <i>Solemya ventricosa</i> , n. s., Conrad, 1849, pl. xvii, figs. 7, 8.....    | 723   |



|                                                                                              | Page.   |
|----------------------------------------------------------------------------------------------|---------|
| <i>Donax ? protezta</i> , n. s., Conrad, 1849, pl. xvii, fig. 9.....                         | 721-724 |
| <i>Venus bisecta</i> , n. s., Conrad, 1849, pl. xvii, figs. 10, 10 a.....                    | 724     |
| <i>Venus angustifrons</i> , n. s., Conrad, 1849, pl. xvii, fig. 11.....                      | 724     |
| <i>Venus lamellifera</i> , n. s., Conrad, 1849, pl. xvii, figs. 12, 12 a.....                | 724     |
| <i>Venus brevilineata</i> , n. s., Conrad, 1849, pl. xvii, fig. 13.....                      | 724     |
| <i>Venus</i> —, sp., Conrad, 1849, pl. xviii, figs. 1, 1 a.....                              | 724     |
| <i>Lucina acutilineata</i> , n. s., Conrad, 1849, pl. xviii, figs. 2, 2 a, b.....            | 725     |
| <i>Tellina arcata</i> , n. s., Conrad, 1849, pl. xviii, figs. 3, 3 a.....                    | 725     |
| <i>Tellina emacerrata</i> , n. s., Conrad, 1849, pl. xviii, fig. 4.....                      | 725     |
| <i>Tellina albaria</i> , n. s., Conrad, 1849, pl. xviii, fig. 5.....                         | 725     |
| <i>Tellina nasuta</i> , n. s., Conrad, 1849.....                                             | 725     |
| <i>Tellina bitruncata</i> , n. s., Conrad, 1849.....                                         | 725     |
| <i>Nucula dicaricata</i> , n. s., Conrad, 1849, pl. xviii, figs. 6, 6 a.....                 | 725-726 |
| <i>Nucula impressa</i> , n. s., Conrad, 1849, pl. xviii, figs. 7 a-e.....                    | 726     |
| <i>Pectunculus patulus</i> , n. s., Conrad, 1849, pl. xviii, figs. 8, 8 a.....               | 726     |
| <i>Pectunculus nitens</i> , n. s., Conrad, 1849, pl. xviii, figs. 9 a, b.....                | 726     |
| <i>Area devincta</i> , n. s., Conrad, 1849, pl. xviii, figs. 10 a.....                       | 726     |
| <i>Area</i> —, Conrad, 1849, pl. xviii, figs. 11 a, b.....                                   | 726     |
| <i>Cardita subenta</i> , n. s., Conrad, 1849, pl. xviii, figs. 12, 12 a.....                 | 726     |
| <i>Pecten propatulus</i> , n. s., Conrad, 1849, pl. xviii, figs. 13, 13 a.....               | 726     |
| <i>Terebratula nitens</i> , n. s., Conrad, 1849, pl. xix, figs. 1, 1 a.....                  | 726-727 |
| — ? Conrad, 1849, pl. xix, fig. 2.....                                                       | 727     |
| <i>Dolium petrosum</i> , n. s., Conrad, 1849, pl. xix, figs. 3 a, b, 4 a, b, and 5 a, b..... | 727     |
| <i>Sigaretus scopulosus</i> , n. s., Conrad, 1849, pl. xix, figs. 6, 6 a-d.....              | 727     |
| <i>Natica sazea</i> , n. s., Conrad, 1849, pl. xix, figs. 7 a, b.....                        | 727     |
| <i>Bulla petrosa</i> , n. s., Conrad, 1849, pl. xix, fig. 8.....                             | 727     |
| <i>Orepidula praecepta</i> , n. s., Conrad, 1849, pl. xix, figs. 9 a, and 10 a, b.....       | 727     |
| <i>Orepidula</i> — ? Conrad, 1849, pl. xix, figs. 11 a, b.....                               | 727     |
| <i>Rostellaria indurata</i> , n. s., Conrad, 1849, pl. xix, fig. 12.....                     | 727-728 |
| <i>Orithium mediale</i> , n. s., Conrad, 1849, pl. xx, figs. 1 a.....                        | 728     |
| <i>Buccinum ? devinctum</i> , n. s., Conrad, 1849, pl. xx, figs. 2, 2 a.....                 | 728     |
| <i>Fusus geniculus</i> , n. s., Conrad, 1849, pl. xx, fig. 3.....                            | 728     |
| <i>Fusus corpulentus</i> , n. s., Conrad, 1849, pl. xx, fig. 4.....                          | 728     |
| <i>Nautilus angustatus</i> , n. s., Conrad, 1849, pl. xx, figs. 5, 6.....                    | 728     |
| <i>Teredo substriata</i> , pl. xx, figs. 7 a, b.....                                         | 728     |

The figures from 8 to 13, inclusive, on pl. xx, representing species from Astoria, are given of natural size, without names.

The plates were destroyed by fire, but about a dozen photographic copies of them have been taken by the U. S. Geological Survey.

## 3.

CONRAD, T. A. Description of the Fossils of Syria, collected in the Palestine expedition. <Official Rep. of the U. S. Exp. to explore the Dead Sea and the river Jordan. Sec. vi, Paleontological Report, pp. 209-235 [pls. i-xvi]. Baltimore, 1869.

The plates are numbered in a very irregular manner.

|                                                                                      | Page. |
|--------------------------------------------------------------------------------------|-------|
| <i>Echinodermata.</i>                                                                |       |
| <i>Echinus</i> , Lin., Lam.....                                                      | 211   |
| <i>E. syriacus</i> , n. s., Conrad, 1852, pl. i, fig. 1, and pl. xxii, fig. 127..... | 212   |
| <i>Holaster</i> , Agassiz.....                                                       | 212   |
| <i>H. syriacus</i> , n. s., Conrad, 1852, pl. i, fig. 2.....                         | 212   |
| <i>Oldaris</i> , Lam.....                                                            | 212   |
| Spines of <i>Oldaris</i> , Conrad, 1852, pl. i, figs. 3-5.....                       | 212   |
| <i>Testacea.</i>                                                                     |       |
| <i>Bivalves.</i>                                                                     |       |
| <i>Ostrea</i> , Lin., Lam.....                                                       | 212   |
| <i>O. elongata</i> , Goldfuss, Nyst., pl. i, figs. 6-8.....                          | 212   |
| <i>O. syriaca</i> , n. s., Conrad, 1852, pl. ii, fig. 12.....                        | 212   |
| <i>O. linguloides</i> , n. s., Conrad, 1852, pl. ii, fig. 13.....                    | 212   |
| <i>O. scapha</i> , Romer, pl. xv, figs. 78, 79.....                                  | 212   |
| <i>Exogyra</i> , Bey.....                                                            | 212   |
| <i>Ostrea boussingaultii</i> , d'Orbigny.....                                        | 212   |
| <i>B. boussingaultii</i> , d'Orbigny, pl. i, fig. 9, and pl. ii, figs. 10, 11.....   | 212   |



|                                                                                                                         | Page.   |
|-------------------------------------------------------------------------------------------------------------------------|---------|
| <i>Pecten</i> , Gault., Lam.                                                                                            | 213     |
| <i>Pecten</i> , —, Conrad, 1852                                                                                         | 213     |
| <i>Nucula</i> , Lam.                                                                                                    | 213     |
| <i>N. submucronata</i> , n. s., Conrad, 1852, pl. ii, fig. 14                                                           | 213     |
| <i>N. parallela</i> , n. s., Conrad, 1852, pl. ii, fig. 15                                                              | 214     |
| <i>N. syriaca</i> , n. s., Conrad, 1852, pl. iii, fig. 16                                                               | 214     |
| <i>N. myriformis</i> , n. s., Conrad, 1852, pl. iii, fig. 17                                                            | 214     |
| <i>N. perobliqua</i> , n. s., Conrad, pl. iii, fig. 18                                                                  | 214     |
| <i>Trigonia</i> , Brug.                                                                                                 | 214     |
| <i>T. syriaca</i> , n. s., Conrad, 1852, pl. iii, figs. 19-23                                                           | 214     |
| <i>T. alta</i> , n. s., Conrad, 1852, pl. iv, fig. 24                                                                   | 214     |
| <i>T. cuneiformis</i> , n. s., Conrad, 1852, pl. iii, fig. 22                                                           | 214-215 |
| <i>Isocardia</i> , Lam.                                                                                                 | 215     |
| <i>I. crenulata</i> , n. s., Conrad, 1852, pl. iv, fig. 26                                                              | 215     |
| <i>Astarte</i> , Sow                                                                                                    | 215     |
| <i>A. syriaca</i> , n. s., Conrad, 1852, pl. iv, fig. 25                                                                | 215     |
| <i>A. orientalis</i> , n. s., Conrad, 1852, pl. iv, fig. 27                                                             | 215     |
| <i>A. pervetus</i> , n. s., Conrad, 1852, pl. iv, fig. 28                                                               | 215     |
| <i>A. engonata</i> , n. s., Conrad, 1852, pl. iv, fig. 29                                                               | 215     |
| <i>A. aretata</i> , n. s., Conrad, 1852, pl. xx, fig. 119                                                               | 215     |
| <i>Arca</i> , Lin.                                                                                                      | 215     |
| <i>A. syriaca</i> , n. s., Conrad, 1852, pl. v, fig. 30                                                                 | 215     |
| <i>A. brevifrons</i> , n. s., Conrad, 1852, pl. v, fig. 31                                                              | 215     |
| <i>A. indurata</i> , n. s., Conrad, 1852, pl. v, fig. 33                                                                | 216     |
| <i>A. orientalis</i> , n. s., Conrad, 1852, pl. v, fig. 36                                                              | 216     |
| <i>A. declivis</i> , n. s., Conrad, 1852, pl. v, fig. 32                                                                | 216     |
| <i>A. subrotunda</i> , n. s., Conrad, 1852, pl. v, fig. 34                                                              | 216     |
| <i>A. acclivis</i> , n. s., Conrad, 1852, pl. v, fig. 35                                                                | 216     |
| <i>Corbula</i> , Brug.                                                                                                  | 216     |
| <i>C. congesta</i> , n. s., Conrad, 1852, pl. v, fig. 37, and pl. xxii, fig. 130                                        | 216     |
| <i>Cardium</i> , Lin., Lam.                                                                                             | 216     |
| <i>C. biserialum</i> , n. s., Conrad, 1852, pl. vi, figs. 38-40                                                         | 216-217 |
| <i>C. crebricarinatum</i> , n. s., Conrad, 1852, pl. vi, figs. 41-43, and pl. xv, fig. 77; Appendix,<br>pl. ii, fig. 16 | 217     |
| <i>C. syriacum</i> , n. s., Conrad, 1852, pl. vii, fig. 45                                                              | 217     |
| <i>C. hermonense</i> , n. s., Conrad, 1852, pl. xxii, fig. 129                                                          | 217     |
| <i>Ordium</i> ? Conrad, 1852, pl. xv, fig. 76                                                                           | 217     |
| <i>Pholadomya</i> , Sow                                                                                                 | 217     |
| <i>P. decisa</i> , n. s., Conrad, 1852, pl. vii, fig. 44                                                                | 217     |
| <i>Panopæa</i> , Ménard                                                                                                 | 217     |
| <i>P. pectorosa</i> , n. s., Conrad, 1852, pl. vii, fig. 46                                                             | 217     |
| <i>Inoceramus</i> , Sow                                                                                                 | 218     |
| <i>I. lynchii</i> , n. s., Conrad, 1852, pl. viii, fig. 47                                                              | 218     |
| <i>Maestra</i> , Lin., Lam.                                                                                             | 218     |
| <i>M. petrosa</i> , n. s., Conrad, 1852, pl. viii, fig. 48                                                              | 218     |
| <i>M. pervetus</i> , n. s., Conrad, 1852, pl. viii, fig. 49                                                             | 218     |
| <i>M. arciformis</i> , n. s., Conrad, 1852, pl. viii, fig. 50                                                           | 218     |
| <i>M. syriaca</i> , n. s., Conrad, pl. viii, fig. 51                                                                    | 218     |
| <i>Venus</i> , Lin., Lam.                                                                                               | 218     |
| <i>V. syriaca</i> , n. s., Conrad, 1852, pl. ix, fig. 52                                                                | 218     |
| <i>V. indurata</i> , n. s., Conrad, 1852, pl. ix, fig. 53                                                               | 219     |
| <i>Cytherea</i> , Lam.                                                                                                  | 219     |
| <i>C. syriaca</i> , n. s., Conrad, 1852, pl. ix, figs. 54-56                                                            | 219     |
| <i>Lucina</i> , Lam.                                                                                                    | 219     |
| <i>L. syriaca</i> , n. s., Conrad, 1852, pl. x, fig. 57                                                                 | 219     |
| <i>L. ? subtruncata</i> , n. s., Conrad, 1852, pl. xv, fig. 76                                                          | 219     |
| <i>Tellina</i> , Lin., Lam.                                                                                             | 219     |
| <i>T. syriaca</i> , n. s., Conrad, 1852, pl. x, figs. 59-61                                                             | 219     |
| <i>T. obruta</i> , n. s., Conrad, 1852, pl. x, fig. 58                                                                  | 219     |
| <i>Orbicula</i> ? Lam.                                                                                                  | 219     |
| <i>O. subobliqua</i> , n. s., Conrad, 1852, pl. x, fig. 61½                                                             | 219     |
| Univalves:                                                                                                              |         |
| <i>Chenopus</i> , Phill.                                                                                                | 220     |
| <i>C. turriculoides</i> , n. s., Conrad, 1852, pl. x, fig. 62                                                           | 220     |
| <i>C. induratus</i> , n. s., Conrad, 1852, pl. xi, fig. 69                                                              | 220     |

|                                                                                  | Page    |
|----------------------------------------------------------------------------------|---------|
| <i>C. syriacus</i> , n. s., Conrad, pl. xii, fig. 71 .....                       | 220     |
| <i>Natica</i> , Lam .....                                                        | 220     |
| <i>N. indurata</i> , n. s., Conrad, 1852, pl. xi, figs. 65 and 68 .....          | 220     |
| <i>N. syriaca</i> , n. s., Conrad, 1852, pl. xii, fig. 70 .....                  | 220     |
| <i>Phorus</i> , Montf. ....                                                      | 220     |
| <i>P. syriacus</i> , n. s., Conrad, 1852, pl. xi, fig. 66 .....                  | 220     |
| <i>Turritella</i> , Lam .....                                                    | 220     |
| <i>T. syriaca</i> , n. s., Conrad, 1852, pl. xv, fig. 75 .....                   | 220-221 |
| <i>T. magnicostata</i> , n. s., Conrad, 1852, pl. x, fig. 63-64 .....            | 221     |
| <i>T. peralteata</i> , n. s., Conrad, 1852, pl. xx, fig. 100 .....               | 221     |
| <i>Nerinea</i> , DeFr. ....                                                      | 221     |
| <i>N. syriaca</i> , n. s., Conrad, 1852, pl. xii, fig. 72; pl. xi, fig. 67 ..... | 221     |
| <i>N. rhamdunensis</i> , n. s., Conrad, 1852, pl. xxii, fig. 132 .....           | 221     |
| <i>Strombus</i> , Lin., Lam. ....                                                | 221     |
| <i>S. pervetus</i> , n. s., Conrad, 1852, pl. xiii, fig. 73 .....                | 221     |
| <i>Ammonites</i> .....                                                           | 221     |
| <i>A. syriacus</i> , n. s., Conrad, 1852, pl. xiv, fig. 74 .....                 | 221     |

## ORGANIC REMAINS OF THE CHALK.

|                                                                                                       |         |
|-------------------------------------------------------------------------------------------------------|---------|
| <i>Astarte</i> , Sow .....                                                                            | 222     |
| <i>A. undulosa</i> , n. s., Conrad, 1852, pl. xvi, figs. 81, and 86; pl. xvii, figs. 89, 90, 90 ..... | 222     |
| <i>A. mucronata</i> , n. s., Conrad, pl. xvii, fig. 88 .....                                          | 222     |
| <i>Corbula</i> , Lam. ....                                                                            | 222     |
| <i>C. rubineolata</i> , n. s., Conrad, 1852, pl. xvi, fig. 83 .....                                   | 222     |
| <i>C. syriaca</i> , n. s., Conrad, 1852, pl. xxi, fig. 125 .....                                      | 222     |
| <i>Opis</i> , DeFr. ....                                                                              | 222     |
| <i>O. undatus</i> , n. s., Conrad, 1852, pl. xvii, fig. 87 .....                                      | 222     |
| <i>Nucula</i> , Lam. ....                                                                             | 222     |
| <i>N. perovata</i> , n. s., Conrad, 1852, pl. xvii, fig. 91 .....                                     | 222     |
| <i>N. crebrilimeata</i> , n. s., Conrad, 1852, pl. xvii, fig. 92-93 .....                             | 222     |
| <i>N. —</i> , Conrad, 1852, Appendix, pl. i, fig. 5 .....                                             | 222     |
| <i>N. perdita</i> , n. s., Conrad, 1852, pl. xvii, fig. 96 .....                                      | 222     |
| <i>N. —</i> , Conrad, 1852, pl. xix, fig. 111 .....                                                   | 222     |
| <i>Oucullaea</i> , Lam. ....                                                                          | 222     |
| <i>O. subrotunda</i> , n. s., Conrad, 1852, pl. xvii, fig. 94 .....                                   | 222     |
| <i>O. linteae</i> , n. s., Conrad, 1852, pl. xvii, fig. 95 .....                                      | 222     |
| <i>O. parallela</i> , n. s., Conrad, 1852, pl. xvii, fig. 98 .....                                    | 222     |
| <i>Arca</i> , Lin. ....                                                                               | 222     |
| <i>A. fabiformis</i> , n. s., Conrad, 1852, pl. xvii, fig. 97 .....                                   | 222     |
| <i>Crassatella</i> , Lam. ....                                                                        | 222     |
| <i>C. syriaca</i> , n. s., Conrad, 1852, pl. xvii, fig. 100 .....                                     | 222-224 |
| <i>Lithodomus</i> , Cuv. ....                                                                         | 224     |
| <i>L. eretaceus</i> , n. s., Conrad, 1852, pl. xvii, fig. 101 .....                                   | 224     |
| <i>Gryphaea</i> , Lam. ....                                                                           | 224     |
| <i>G. capuloides</i> , n. s., Conrad, 1852, pl. xviii, figs. 103 and 104 .....                        | 224     |
| <i>G. vesicularis</i> , Brown, pl. xviii, fig. 105 .....                                              | 224     |
| <i>Ecogyra</i> , Say .....                                                                            | 224     |
| <i>E. densata</i> , n. s., Conrad, pl. xviii, fig. 102 .....                                          | 224     |
| <i>E. densata</i> , var., Conrad, 1852, pl. xviii, fig. 106 .....                                     | 224     |
| <i>Avicula</i> , Lam. ....                                                                            | 225     |
| <i>A. samariensis</i> , n. s., Conrad, 1852, pl. xix, fig. 107 .....                                  | 225     |
| <i>Pecten</i> , Lin., Lam. ....                                                                       | 225     |
| <i>P. delumbis</i> , n. s., Conrad, 1852, pl. xix, fig. 110, and Appendix, pl. i, fig. 4 .....        | 225     |
| <i>P. obrutus</i> , n. s., Conrad, 1852, pl. xix, fig. 114 .....                                      | 225     |
| <i>Cardium</i> , Lin., Lam. ....                                                                      | 225     |
| <i>C. bellum</i> , n. s., Conrad, 1852, Appendix, pl. i, fig. 3 .....                                 | 225     |
| <i>C. ovulum</i> , n. s., Conrad, 1852, pl. xix, fig. 108 .....                                       | 225     |
| <i>Astarte</i> , Sow. ....                                                                            | 225     |
| <i>A. linteae</i> , n. s., Conrad, 1852, pl. xix, fig. 109 .....                                      | 225     |
| <i>A. sublineolata</i> , n. s., Conrad, pl. xix, fig. 112 .....                                       | 225     |
| <i>Venus</i> , Lin., Lam. ....                                                                        | 225     |
| <i>V. parvula</i> , n. s., Conrad, Appendix, pl. i, fig. 2 .....                                      | 225     |
| <i>Inoceramus</i> , Sow. ....                                                                         | 226     |
| <i>I. aratus</i> , n. s., Conrad, 1852, pl. xix, fig. 113 .....                                       | 226     |
| <i>Lucina</i> , Lam. ....                                                                             | 226     |

|                                                                         | Page. |
|-------------------------------------------------------------------------|-------|
| <i>L. safedensis</i> , n. s., Conrad, 1852, pl. ix, fig. 115.....       | 226   |
| <i>Terebratula</i> , Lam.....                                           | 226   |
| <i>T. hermonensis</i> , n. s., Conrad, 1852, pl. xx, fig. 123 .....     | 226   |
| Univalves:                                                              |       |
| <i>Fusus</i> , Lam.....                                                 | 226   |
| <i>F. ellerii</i> , n. s., Conrad, 1852, pl. xvi, fig. 82.....          | 226   |
| <i>Chenopus</i> , Phillipi.....                                         | 226   |
| <i>Chenopus</i> , Conrad, 1852.....                                     | 226   |
| <i>Hippurites</i> , Lam.....                                            | 226   |
| <i>H. syriacus</i> , n. s., Conrad, 1852, pl. xvi, fig. 84 .....        | 226   |
| <i>Nerinea</i> , Deffr.....                                             | 227   |
| <i>N. cretacea</i> , n. s., Conrad, 1852, pl. xvi, fig. 85 .....        | 227   |
| <i>Ancylloceras</i> , d'Orbigny .....                                   | 227   |
| <i>A. safedensis</i> , n. s., Conrad, 1852, pl. xx, figs. 117-118.....  | 227   |
| <i>Baculites</i> , Lam.....                                             | 227   |
| <i>B. syriacus</i> , n. s., Conrad, 1852, pl. xx, fig. 121.....         | 227   |
| <i>B</i> ———, Conrad, 1852, pl. xx, fig. 122 .....                      | 227   |
| <i>Ammonites</i> , Brug.....                                            | 227   |
| <i>A. safedensis</i> , n. s., Conrad, 1852, pl. xxi, fig. 124.....      | 227   |
| <i>Nummulites</i> .....                                                 | 227   |
| <i>N. arbiensis</i> , n. s., Conrad, 1852, pl. xxii, fig. 127 .....     | 227   |
| <i>Dentalium</i> , Lin.....                                             | 228   |
| <i>D. cretaceum</i> , n. s., Conrad, 1852, Appendix, pl. i, fig. 1..... | 228   |
| Echinodermata                                                           |       |
| <i>Echinus</i> , Lin.....                                               | 228   |
| <i>E. kerakenis</i> , n. s., Conrad, 1852, pl. xix, fig. 116 .....      | 228   |

APPENDIX.

JURASSIC FORMS.

|                                                                                   |     |
|-----------------------------------------------------------------------------------|-----|
| Bivalves:                                                                         |     |
| <i>Janira</i> , Shum.....                                                         | 230 |
| <i>J. syriaca</i> , n. s., Conrad, 1852, pl. i, fig. 6 .....                      | 230 |
| <i>Ostraea</i> , Lin., Lam.....                                                   | 230 |
| <i>O. corticosa</i> , n. s., Conrad, 1852, pl. i, fig. 7.....                     | 230 |
| <i>O. virgata</i> ? n. s., Conrad, pl. i, fig. 8.....                             | 230 |
| <i>Opis</i> , Deffr.....                                                          | 231 |
| <i>O. equalis</i> , n. s., Conrad, 1852, pl. ii, fig. 9 .....                     | 231 |
| <i>O. orientalis</i> , n. s., Conrad, 1852, pl. ii, fig. 10 .....                 | 231 |
| <i>O. obrutus</i> , n. s., Conrad, 1852, pl. ii, fig. 12.....                     | 231 |
| <i>Astarte</i> , Sow.....                                                         | 231 |
| <i>A. lucinoides</i> , n. s., Conrad, 1852, pl. ii, fig. 11 .....                 | 231 |
| <i>A. subcordata</i> , n. s., Conrad, 1852, pl. ii, fig. 13.....                  | 231 |
| <i>Inoceramus</i> , Sow.....                                                      | 231 |
| <i>I. syriacus</i> , n. s., Conrad, 1852, pl. ii, fig. 14 .....                   | 231 |
| <i>I. elevatus</i> , n. s., Conrad, 1852, pl. ii, fig. 15 .....                   | 231 |
| <i>Pholadomya</i> , Sow.....                                                      | 231 |
| <i>P. syriaca</i> , n. s., Conrad, 1852, pl. ii, fig. 17. ".....                  | 231 |
| <i>Cardium</i> , Lin.....                                                         | 231 |
| <i>O. crebriechinatum</i> , n. s., Conrad, 1852, pl. ii, fig. 16 .....            | 231 |
| <i>Arca</i> , Lin.....                                                            | 231 |
| <i>A. longa</i> , n. s., Conrad, 1852, pl. iii, fig. 18.....                      | 231 |
| <i>A. dhamdunensis</i> , n. s., Conrad, 1852, pl. iii, fig. 19.....               | 232 |
| <i>A. cuneus</i> , n. s., Conrad, 1852, pl. iii, fig. 22 .....                    | 232 |
| <i>Oculloea</i> , Lam.....                                                        | 232 |
| <i>O. opiformis</i> , n. s., Conrad, 1852, pl. iii, fig. 21 .....                 | 232 |
| <i>Nucula</i> , Lam.....                                                          | 232 |
| <i>N. abrupta</i> , n. s., Conrad, 1852, pl. iii, fig. 20.....                    | 232 |
| <i>N. ? obtenta</i> , n. s., Conrad, 1852, pl. iii, fig. 23.....                  | 232 |
| <i>Tellina</i> , Lin.....                                                         | 232 |
| <i>T. syriaca</i> ?, Conrad, 1852, pl. iii, fig. 25, and pl. x, figs. 59-61 ..... | 232 |
| <i>Orbicula</i> , Cuv.....                                                        | 232 |
| <i>O. ? syriaca</i> , n. s., Conrad, 1852, pl. iii, fig. 24 .....                 | 232 |
| <i>Trigonia</i> , Brug.....                                                       | 232 |
| <i>T. syriaca</i> , n. s., Conrad, 1852, pl. iv, fig. 26 .....                    | 232 |

|                                                                                | Page    |
|--------------------------------------------------------------------------------|---------|
| <i>T. distans</i> , n. s., Conrad, 1852, pl. iv, fig. 27 .....                 | 232     |
| <i>Panopæa</i> , Mén. ....                                                     | 232     |
| <i>P. orientalis</i> , n. s., Conrad, 1852, pl. iv, fig. 28 .....              | 232-233 |
| Univalves:                                                                     |         |
| <i>Nerinea</i> , DeFrance .....                                                | 233     |
| <i>N. ? cochleiformis</i> , n. s., Conrad, 1852, pl. iv, fig. 29 .....         | 233     |
| <i>N. ———</i> , Conrad, 1852, pl. iv, figs. 30, 31 .....                       | 233     |
| <i>N. ? orientalis</i> , n. s., Conrad, 1852, pl. v, fig. 32 .....             | 233     |
| <i>N. syriaca</i> , n. s., Conrad, 1852, pl. v, figs. 33, 34, 35, 37, 38 ..... | 233     |
| <i>N. abbreviata</i> , n. s., Conrad, 1852, pl. v, fig. 36 .....               | 233     |
| <i>N. ———</i> , Conrad, 1852 .....                                             | 233     |
| <i>Actæonella</i> , d'Orb. ....                                                | 233     |
| <i>A. syriaca</i> , n. s., Conrad, 1852, pl. v, fig. 40 .....                  | 233     |
| <i>Cerithium</i> , Adams, Lam. ....                                            | 233     |
| <i>C. bilineatum</i> , n. s., Conrad, 1852, pl. v, fig. 39 .....               | 233     |
| <i>Natica</i> , Lam. ....                                                      | 233     |
| <i>N. orientalis</i> , n. s., Conrad, 1852, pl. v, fig. 41 .....               | 233     |
| <i>Turritella</i> , Lam. ....                                                  | 234     |
| <i>T. syriaca</i> , n. s., Conrad, 1852, pl. v, fig. 42 .....                  | 234     |
| <i>Cancellaria</i> , Lam. ....                                                 | 234     |
| <i>C. petrosa</i> , n. s., Conrad, 1852, pl. v, fig. 43 .....                  | 234     |
| Bivalves:                                                                      |         |
| <i>Lithodomus</i> , Cuv. ....                                                  | 234     |
| <i>L. stamineus</i> , n. s., Conrad, 1852, pl. v, fig. 44 .....                | 234     |
| <i>Cardium</i> , Lin. ....                                                     | 234     |
| <i>C. biserialatum</i> , n. s., Conrad, 1852, pl. v, fig. 45 .....             | 234     |
| Univalves:                                                                     |         |
| <i>Ammonites</i> .....                                                         | 234     |
| <i>A. libanensis</i> , n. s., Conrad, 1852, pl. vi, fig. 46 .....              | 234     |
| <i>Hippurites</i> , Lam. ....                                                  | 234     |
| <i>H. liratus</i> , n. s., Conrad, 1852, pl. vii, figs. 47, 48 .....           | 234     |
| <i>H. plicatus</i> , n. s., Conrad, 1852, pl. vii, fig. 49 .....               | 234     |
| <i>Natica</i> , Lam. ....                                                      | 234     |
| <i>N. ? scalaris</i> , n. s., Conrad, 1852, pl. vii, fig. 50 .....             | 234     |
| <i>Chenopus</i> .....                                                          | 235     |
| <i>C. ———</i> , Conrad, pl. viii, figs. 51, 52 .....                           | 235     |
| Bivalves:                                                                      |         |
| <i>Corbula</i> , Lam. ....                                                     | 235     |
| <i>C. alethensis</i> , n. s., Conrad, 1852, pl. viii, fig. 53 .....            | 235     |
| <i>Orbicula</i> , Lam. ....                                                    | 235     |
| <i>Orbicula ? ———</i> , Conrad, 1852, pl. viii, fig. 55 .....                  | 235     |
| <i>Echinodermata</i> .....                                                     |         |
| <i>Echinus</i> , Lin. ....                                                     | 235     |
| <i>E. libanensis</i> , n. s., Conrad, 1852, pl. viii, fig. 54 .....            | 235     |
| <i>E. bullatus</i> , n. s., Conrad, 1852, pl. viii, fig. 56 .....              | 235     |

## 4. .

CONRAD, T. A. Report on the fossil shells collected in California by William P. Blake, geologist of the expedition under the command of Lieut. R. S. Williamson, United States Topographical Engineers. <Reports of Explorations and Surveys from the Mississippi River to the Pacific Ocean. Appendix to the Preliminary Geological Report of William P. Blake. Paleontology article I, pp. 5-20, 8vo, House Document 129, Washington (1855).

## CATALOGUE.

|                                     | Page |
|-------------------------------------|------|
| Eocene .....                        | 7    |
| Miocene and recent formations ..... | 7-8  |

## DESCRIPTIONS OF FOSSIL SHELLS FROM THE EOCENE AND MIOCENE FORMATIONS OF CALIFORNIA.

## Eocene.

|                                                             |   |
|-------------------------------------------------------------|---|
| <i>Cardium</i> , Lin. ....                                  | 9 |
| <i>C. luteum</i> , n. s., Conrad, 1855, pl. 1, fig. 1 ..... | 9 |



|                                                                     | Page. |
|---------------------------------------------------------------------|-------|
| <i>Dosinia</i> , Scopoli .....                                      | 9     |
| <i>D. alta</i> , n. s., Conrad, 1855, pl. i, fig. 2 .....           | 9     |
| <i>Meretrix</i> , Lam.— <i>Cytherea</i> , Lam. ....                 | 9     |
| <i>M. uvasana</i> , n. s., Conrad, 1855, pl. i, fig. 3 .....        | 9     |
| <i>M. californiana</i> , n. s., Conrad, 1855, pl. i, fig. 4 .....   | 9     |
| <i>Crassatella</i> , Lam. ....                                      | 9     |
| <i>C. uvasana</i> , n. s., Conrad, 1855, pl. i, fig. 5 .....        | 9     |
| <i>O. alta</i> , n. s., Conrad, 1855 .....                          | 9     |
| <i>Mytilus</i> , Lin. ....                                          | 10    |
| <i>M. humerus</i> , n. s., Conrad, 1855, pl. i, fig. 10 .....       | 10    |
| <i>Cardita</i> , Brug. ....                                         | 10    |
| <i>C. planicosta</i> , n. s., Conrad, pl. i, fig. 6 .....           | 10    |
| <i>Natica</i> , Adanson .....                                       | 10    |
| <i>N. cistites</i> ?, Conrad, 1833, pl. i, fig. 7 .....             | 10    |
| <i>N. gibbosa</i> and <i>semilunata</i> , Lea .....                 | 10    |
| <i>N. alveata</i> , n. s., Conrad, 1855, pl. i, figs. 8, 8 a .....  | 10    |
| <i>Turritella</i> , Lam. ....                                       | 10    |
| <i>T. uvasana</i> , n. s., Conrad, 1855, pl. i, fig. 12 .....       | 10-11 |
| <i>Voluta</i> ( <i>Voluta</i> ), Swains. [s] .....                  | 11    |
| <i>V. californiana</i> , n. s., Conrad, 1855, pl. i, fig. 9 .....   | 11    |
| <i>Busycon</i> , ? .....                                            | 11    |
| <i>B. ? blakei</i> , n. s., Conrad, 1855, pl. i, fig. 13 .....      | 11    |
| <i>Clavatula</i> , ? Swains. ....                                   | 11    |
| <i>C. ? californica</i> , n. s., Conrad, 1855, pl. i, fig. 11 ..... | 11    |

FOSSILS OF THE MIOCENE AND RECENT FORMATIONS OF CALIFORNIA.

|                                                                          |       |
|--------------------------------------------------------------------------|-------|
| <i>Cardium</i> , Lin. ....                                               | 11    |
| <i>C. modestum</i> , n. s., Conrad, 1855, pl. ii, fig. 15 .....          | 11    |
| <i>Nuculana</i> , Lam. ....                                              | 11    |
| <i>N. decisa</i> , n. s., Conrad, 1855, pl. ii, fig. 19 .....            | 11-12 |
| <i>Corbula</i> .....                                                     | 12    |
| <i>C. diegoana</i> , n. s., Conrad, 1855, pl. ii, fig. 16 .....          | 12    |
| <i>Meretrix</i> , Lam. ....                                              | 12    |
| <i>M. uniomeris</i> , n. s., Conrad, 1855, pl. ii, fig. 20 .....         | 12    |
| <i>M. decisa</i> , n. s., Conrad, 1855, pl. ii, fig. 27 .....            | 12    |
| <i>M. tularana</i> , n. s., Conrad, 1855, pl. ii, figs. 22, 22 a .....   | 12    |
| <i>Tellina</i> , Lin. ....                                               | 12    |
| <i>T. diegoana</i> , n. s., Conrad, 1855, pl. ii, fig. 28 .....          | 12    |
| <i>T. congesta</i> , n. s., Conrad, 1855, pl. ii, figs. 14, 18, 21 ..... | 12-13 |
| <i>T. pedroana</i> , n. s., Conrad, 1855, pl. ii, fig. 17 .....          | 13    |
| <i>Arca</i> , Lin. ....                                                  | 13    |
| <i>A. microdonta</i> , n. s., Conrad, 1855, pl. ii, fig. 29 .....        | 12    |
| <i>Tapes</i> .....                                                       | 13    |
| <i>T. diversum</i> , Sow., pl. ii, figs. 24, c, and 26 .....             | 13    |
| <i>Saxiosea</i> Fleur de Bell .....                                      | 13    |
| <i>S. abrupta</i> , n. s., Conrad, 1855, pl. ii, figs. 25, 25 a .....    | 13    |
| <i>Petricola</i> , Lam. ....                                             |       |
| <i>P. pedroana</i> , n. s., Conrad, pl. ii, fig. 23 .....                | 13-14 |
| <i>Schizothaerus</i> , Conrad .....                                      | 14    |
| <i>S. nuttalli</i> , n. s., Conrad, 1855, pl. iii, figs. 33, 33 a .....  | 14    |
| <i>Lutraria</i> ?, Lam. ....                                             | 14    |
| <i>L. traski</i> , n. s., Conrad, 1855, pl. iii, fig. 30 .....           | 14    |
| <i>Mactra</i> , Lin. ....                                                | 14    |
| <i>M. diegoana</i> , n. s., Conrad, 1855, pl. iv, fig. 35 .....          | 14    |
| <i>Modiola</i> , Lam. ....                                               | 14    |
| <i>M. contracta</i> , n. s., Conrad, 1855, pl. iv, fig. 35 .....         | 14    |
| <i>Mytilus</i> , Lin. ....                                               | 15    |
| <i>M. pedroanus</i> , n. s., Conrad, 1855, pl. —, fig. 40 .....          | 15    |
| <i>Pecten</i> , Lin. ....                                                | 15    |
| <i>P. deserti</i> , n. s., Conrad, 1855, pl. —, fig. 41 .....            | 15    |
| <i>Anomia</i> , Lin. ....                                                | 15    |
| <i>A. subcostata</i> , n. s., Conrad, 1855, pl. —, fig. 34 .....         | 15    |
| <i>Ostrea</i> , Lin. ....                                                | 15    |
| <i>O. vespertina</i> , Conrad, 1855, pl. —, fig. 36-38 .....             | 15    |

|                                                                         | Page  |
|-------------------------------------------------------------------------|-------|
| <i>O. heermanni</i> , Conrad .....                                      | 15-16 |
| <i>Penitella</i> .....                                                  | 16    |
| <i>P. epelæum</i> , n. s., Conrad, 1855, pl. —, figs. 43, 43 a, b ..... | 16    |
| <i>Pisurella</i> , Lam. ....                                            | 16    |
| <i>F. crenulata</i> , Sow., pl. —, fig. 44 .....                        | 16    |
| <i>Orepidula</i> , Lam., <i>Orypta</i> , Humph. ....                    | 16    |
| <i>O. princeps</i> , n. s., Conrad, 1855, pl. —, fig. 53 .....          | 16    |
| <i>Natica</i> .....                                                     | 16    |
| <i>N. diegoana</i> , n. s., Conrad, 1855, pl. —, fig. 39 .....          | 16    |
| <i>Trochita</i> , Schum. ....                                           | 17    |
| <i>T. diegoana</i> , n. s., Conrad, 1855, pl. —, fig. 42 .....          | 17    |
| <i>Orucibulum</i> , Shum. ....                                          | 17    |
| <i>O. spinosum</i> , n. s., Conrad, 1855, pl. —, fig. 46 .....          | 17    |
| <i>Nassa</i> , Lam. ....                                                | 17    |
| <i>N. int[er]striata</i> , n. s., Conrad, 1855, pl. —, fig. 49 .....    | 17    |
| <i>N. pedroana</i> , n. s., Conrad, 1855, pl. —, fig. 48 .....          | 17    |
| <i>Strephona</i> , Browne, <i>Oliva</i> , Lam. ....                     | 17    |
| <i>S. pedroana</i> , n. s., Conrad, 1855, pl. —, fig. 51 .....          | 17    |
| <i>Littorina</i> , Ferr. ....                                           | 17    |
| <i>L. pedroana</i> , n. s., Conrad, 1855, pl. —, fig. 50 .....          | 17    |
| <i>Stramonita</i> , Shum., <i>Purpura</i> , Lam. ....                   | 17    |
| <i>S. petrosa</i> , n. s., Conrad, 1855, pl. —, fig. 47, 47 a .....     | 17-18 |

## TERTIARY SHELLS OF THE Isthmus OF DARIEN.

## Miocene †

|                                                                  |    |
|------------------------------------------------------------------|----|
| <i>Gratelupia</i> † Desmoulins .....                             | 18 |
| <i>G. macrostoma</i> , n. s., Conrad, 1855, pl. —, fig. 54 ..... | 18 |
| <i>Meretrix</i> .....                                            | 18 |
| <i>M. dariena</i> , n. s., Conrad, 1855, pl. —, fig. 55 .....    | 18 |
| <i>Tellina</i> , Lin. ....                                       | 18 |
| <i>T. dariena</i> , n. s., Conrad, 1855, pl. —, fig. 53 .....    | 19 |

## MIOCENE FOSSILS FROM OCOYA CREEK.

|                                                                              |       |
|------------------------------------------------------------------------------|-------|
| <i>Natica</i> .....                                                          | 18    |
| <i>N. ocoyana</i> , n. s., Conrad, 1855, pl. vi, fig. 57 .....               | 18    |
| <i>N. geniculata</i> , n. s., Conrad, 1855, pl. vi, fig. 67 .....            | 18-19 |
| <i>Bulla</i> .....                                                           | 19    |
| <i>B. jugularis</i> , n. s., Conrad, 1855, pl. vi, figs. 62, 62 a, b .....   | 19    |
| <i>Pleurotoma</i> .....                                                      | 19    |
| <i>P. transmontana</i> , n. s., Conrad, 1855, pl. vi, fig. 69 .....          | 19    |
| <i>P. ocoyana</i> , n. s., Conrad, 1855, pl. vi, fig. 71 .....               | 19    |
| <i>Sycotopus</i> .....                                                       | 19    |
| <i>S. ocoyanus</i> , n. s., Conrad, 1855, pl. vi, fig. 72 .....              | 19    |
| <i>Turritella</i> .....                                                      | 19    |
| <i>T. ocoyana</i> , n. s., Conrad, 1855, pl. vii, figs. 73, 73 a, 73 b ..... | 19    |
| <i>Colus</i> .....                                                           | 19    |
| <i>O. arcatus</i> , n. s., Conrad, 1855, pl. vii, fig. 76 .....              | 19    |
| <i>Tellina</i> .....                                                         | 19    |
| <i>T. ocoyana</i> , n. s., Conrad, 1855, pl. vii, fig. 75 .....              | 19    |
| <i>Pecten</i> .....                                                          | 19    |
| <i>P. nevadanus</i> , n. s., Conrad, 1855, pl. vii, fig. 77 .....            | 19    |
| <i>P. catillifornis</i> , n. s., Conrad, 1855, pl. viii, fig. 83 .....       | 20    |

## 5.

CONRAD, T. A. Descriptions of the Fossil Shells. <Reports of Expls. & Survs. from the Mississippi River to the Pacific Ocean. Vol. v, part ii, appendix, article ii, pp. 317-329, pls. ii-ix. Washington, 1856.

|                 |                 |
|-----------------|-----------------|
| Catalogue ..... | Page<br>318-320 |
|-----------------|-----------------|

## DESCRIPTIONS OF FOSSIL SHELLS FROM THE EOCENE AND MIOCENE FORMATIONS OF CALIFORNIA.

## Eocene.

|                                                       |     |
|-------------------------------------------------------|-----|
| <i>Cardium</i> , Lin. ....                            | 320 |
| <i>C. luteum</i> , Conrad, 1855, pl. ii, fig. 1 ..... | 320 |
| <i>Dorsina</i> , Scopoli .....                        | 320 |

|                                                                     | Page.   |
|---------------------------------------------------------------------|---------|
| <i>D. alta</i> , Conrad, 1855, pl. ii, fig. 2 .....                 | 320     |
| <i>Meretrix</i> , Lam.— <i>Cytherea</i> , Lam .....                 | 320     |
| <i>M. uvasana</i> , Conrad, 1855, pl. ii, fig. 3 .....              | 320     |
| <i>M. californiana</i> , Conrad, 1855, pl. ii, fig. 4 .....         | 320     |
| <i>Orassatella</i> , Lam. ....                                      | 320     |
| <i>O. uvasana</i> , Conrad, 1855, pl. ii, fig. 5 .....              | 320-321 |
| <i>O. alta</i> , Conrad, 1855 .....                                 | 321     |
| <i>Mytilus</i> , Lin. ....                                          | 321     |
| <i>M. humerus</i> , Conrad, 1855, pl. ii, fig. 10 .....             | 321     |
| <i>Oardita</i> , Brug. ....                                         | 321     |
| <i>O. planicosta</i> , Conrad, 1855, pl. ii, fig. 6 .....           | 321     |
| <i>Natica</i> , Adamson .....                                       | 321     |
| <i>N. cetites?</i> Conrad, 1833, pl. ii, fig. 7 .....               | 321     |
| <i>N. gibbosa</i> and <i>semilunata</i> , Lea, 1833 .....           | 321     |
| <i>N. alveata</i> , Conrad, pl. ii, figs. 8, 8 a .....              | 321     |
| <i>Turritella</i> , Lam. ....                                       | 321     |
| <i>T. uvasana</i> , Conrad, 1855, pl. ii, fig. 12 .....             | 321-322 |
| <i>Voluta</i> [ <i>lithes</i> Swaina. ....                          | 322     |
| <i>V. californiana</i> , Conrad, 1855, pl. ii, fig. 9 .....         | 322     |
| <i>Busycon?</i> .....                                               | 322     |
| <i>B.?</i> <i>blakei</i> , Conrad, 1855, pl. ii, fig. 13 .....      | 322     |
| <i>Clavutula?</i> Swaina .....                                      | 322     |
| <i>O.?</i> <i>californica</i> , Conrad, 1855, pl. ii, fig. 11 ..... | 322     |

FOSSILS OF THE MIOCENE AND RECENT FORMATIONS OF CALIFORNIA.

|                                                                          |         |
|--------------------------------------------------------------------------|---------|
| <i>Cardium</i> , Lin. ....                                               | 322     |
| <i>O. modestum</i> , Conrad, 1855, pl. iii, fig. 15 .....                | 322     |
| <i>Nucula</i> , Lam. ....                                                | 322     |
| <i>N. decisa</i> , Conrad, 1855, pl. iii, fig. 19 .....                  | 322     |
| <i>Corbula</i> .....                                                     | 322     |
| <i>O. diegoana</i> , Conrad, 1855, pl. iii, fig. 16 .....                | 322-323 |
| <i>Meretrix</i> , Lam. ....                                              | 323     |
| <i>M. uniomeris</i> , Conrad, 1855, pl. iii, fig. 20 .....               | 323     |
| <i>M. decisa</i> , Conrad, 1855, pl. iii, fig. 27 .....                  | 323     |
| <i>M. tularana</i> , Conrad, 1855, pl. iii, fig. 22, 22 a .....          | 323     |
| <i>Tellina</i> , Lin. ....                                               | 323     |
| <i>T. diegoana</i> , Conrad, 1855, pl. iii, fig. 28 .....                | 323     |
| <i>T. congesta</i> , Conrad, 1855, pl. iii, figs. 14, 18, 21, 21 a ..... | 323     |
| <i>T. pedroana</i> , Conrad, 1855, pl. iii, fig. 17 .....                | 323     |
| <i>Arca</i> , Lin. ....                                                  | 323     |
| <i>A. microdonta</i> , Conrad, 1855, pl. iii, fig. 29 .....              | 323-324 |
| <i>Tapes</i> .....                                                       | 324     |
| <i>T. diversum</i> , Sow., pl. iv, figs. 31, 32 a, b .....               | 324     |
| <i>Saxicava</i> , Fleur de Bell .....                                    | 324     |
| <i>S. abrupta</i> , Conrad, 1855, pl. iii, figs. 25, 25 a .....          | 324     |
| <i>Petricola</i> , Lam. ....                                             | 324     |
| <i>P. pedroana</i> , Conrad, 1855, pl. iii, fig. 24 .....                | 324     |
| <i>Schizothærus</i> , Conrad .....                                       | 324     |
| <i>S. nuttalli</i> , Conrad, 1855, pl. iv, figs. 33, 33 a .....          | 324     |
| <i>Lutraria?</i> Lam. ....                                               | 324     |
| <i>L. traski</i> , Conrad, 1855, pl. iii, fig. 23 .....                  | 324-325 |
| <i>Macra</i> , Lin. ....                                                 | 325     |
| <i>M. diegoana</i> , Conrad, 1855, pl. v, fig. 45 .....                  | 325     |
| <i>Modiola</i> , Lam. ....                                               | 325     |
| <i>M. contracta</i> , Conrad, pl. v, fig. 35 .....                       | 325     |
| <i>Mytilus</i> , Lin. ....                                               | 325     |
| <i>M. pedroanus</i> , Conrad, 1855, pl. v, fig. 40 .....                 | 325     |
| <i>Pecten</i> , Lin. ....                                                | 325     |
| <i>P. deserti</i> , Conrad, 1855, pl. v, fig. 41 .....                   | 325     |
| <i>Anomia</i> .....                                                      | 325     |
| <i>A. subcostata</i> , Conrad, 1855, pl. v, fig. 34 .....                | 325     |
| <i>Ostrea</i> , Lin. ....                                                | 325     |
| <i>O. vespertina</i> , Conrad, 1855, pl. v, figs. 36-38 .....            | 325-326 |
| <i>O. heermanni</i> , Conrad, 1855, pl. —, figs. — .....                 | 326     |

|                                                                  | Page |
|------------------------------------------------------------------|------|
| <i>Penitella</i> .....                                           | 326  |
| <i>P. spelaea</i> , Conrad, 1855, pl. v, figs. 43, 43 a, b ..... | 326  |
| <i>Fissurella</i> , Lam. ....                                    | 326  |
| <i>F. crenulata</i> , Sow., pl. v, fig. 44 .....                 | 326  |
| <i>Orepidula</i> , Lam., <i>Crypta</i> , Humph. ....             | 326  |
| <i>C. princeps</i> , Conrad, 1855, pl. vi, figs. 52, 52 a .....  | 326  |
| <i>Narica</i> .....                                              | 326  |
| <i>N. diegoana</i> , Conrad, 1855, pl. v, fig. 39 .....          | 326  |
| <i>Trochita</i> , Shum. ....                                     | 327  |
| <i>T. diegoana</i> , Conrad, 1855, pl. v, fig. 42 .....          | 327  |
| <i>Crucibulum</i> , Shum. ....                                   | 327  |
| <i>C. spinosum</i> , Conrad, 1855, pl. v, figs. 46, 46 a .....   | 327  |
| <i>Nassa</i> , Lam. ....                                         | 327  |
| <i>N. interstriata</i> , Conrad, 1855, pl. vi, fig. 49 .....     | 327  |
| <i>N. pedroana</i> , Conrad, 1855, pl. vi, fig. 48 .....         | 327  |
| <i>Strephona</i> , Browne, <i>Olivæ</i> , Lam. ....              | 327  |
| <i>S. pedroana</i> , Conrad, 1855, pl. vi, fig. 51 .....         | 327  |
| <i>Littorina</i> , Ferr. ....                                    | 327  |
| <i>L. pedroana</i> , Conrad, 1855, pl. vi, fig. 50 .....         | 327  |
| <i>Stramonita</i> , Shum., <i>Purpura</i> , Lam. ....            | 327  |
| <i>S. petrosa</i> , Conrad, 1855, pl. vi, figs. 47, 47 a .....   | 327  |

## TERTIARY SHELLS OF THE ISTHMUS OF DARIEN.

*Miocena.*

|                                                               |     |
|---------------------------------------------------------------|-----|
| <i>Gratulapia</i> ? Desmoulina. ....                          |     |
| <i>G. l. mactropsis</i> , Conrad, 1855, pl. vi, fig. 54 ..... | 328 |
| <i>Meretrix</i> .....                                         | 328 |
| <i>M. dariena</i> , Conrad, 1855, pl. vi, fig. 55 .....       | 328 |
| <i>Tellina</i> , Lin. ....                                    | 328 |
| <i>T. dariena</i> , Conrad, 1855, pl. vi, fig. 53 .....       | 328 |

## MIOCENE FOSSILS FROM OCOYA CREEK.

|                                                                      |         |
|----------------------------------------------------------------------|---------|
| <i>Natica</i> .....                                                  | 328     |
| <i>N. ocoyana</i> , Conrad, 1855, pl. vii, figs. 57, 57 a .....      | 328     |
| <i>N. geniculata</i> , Conrad, 1855, pl. vii, fig. 67 .....          | 328     |
| <i>Bulla</i> .....                                                   | 328     |
| <i>B. jugularis</i> , Conrad, 1856, pl. vii, figs. 62, 62 a, b ..... | 328     |
| <i>Pleurotoma</i> .....                                              | 328     |
| <i>P. transmontana</i> , Conrad, 1855, pl. vi, fig. 69 .....         | 328-329 |
| <i>Sycopus</i> .....                                                 | 329     |
| <i>S. ocoyanus</i> , Conrad, 1855, pl. vii, figs. 72, 72 a .....     | 329     |
| <i>Turritella</i> .....                                              | 329     |
| <i>T. ocoyana</i> , Conrad, 1855, pl. viii, figs. 73, 73 a, b .....  | 329     |
| <i>Colus</i> .....                                                   | 329     |
| <i>C. arcatus</i> , Conrad, 1855, pl. viii, fig. 76 .....            | 329     |
| <i>Tellina</i> .....                                                 | 329     |
| <i>T. ocoyana</i> , Conrad, 1855, pl. viii, figs. 75, 75 a .....     | 329     |
| <i>Pecten</i> .....                                                  | 329     |
| <i>P. nevadanus</i> , Conrad, 1855, pl. viii, fig. 77 .....          | 329     |
| <i>P. catilliformis</i> , Conrad, 1855, pl. ix, fig. 83 .....        | 329     |

## 6.

CONRAD, T. A. Descriptions of one Tertiary and eight New Cretaceous Fossils from Texas, in the Collection of Major Emory. <Proc. Acad. Nat. Sci. Philadelphia, vol. vii, pp. 268-269, February, 1855. Philadelphia, 1856.

|                                               | Page |
|-----------------------------------------------|------|
| <i>Rostellites</i> , Conrad .....             | 268  |
| <i>R. texanus</i> , n. s., Conrad, 1856 ..... | 268  |
| <i>Turritella</i> , Lam. ....                 | 268  |



|                                                     | Page. |
|-----------------------------------------------------|-------|
| <i>T. irrorata</i> , Conrad, n. s., 1856 .....      | 268   |
| <i>Caprina</i> .....                                | 268   |
| <i>O. planata</i> , n. s., Conrad, 1856 .....       | 268   |
| <i>O. occidentalis</i> , n. s., Conrad, 1856 .....  | 268   |
| <i>Neithea</i> , Drouet .....                       | 269   |
| <i>N. occidentalis</i> , n. s., Conrad, 1856 .....  | 269   |
| <i>Mactra</i> , Lin. ....                           | 269   |
| <i>M. tezana</i> , n. s. Conrad, 1856 .....         | 269   |
| <i>Exogyra</i> , Say .....                          | 269   |
| <i>E. fragosa</i> , n. s., Conrad, 1856 .....       | 269   |
| <i>E. Ambriata</i> , n. s., Conrad, 1856 .....      | 296   |
| Tertiary species :                                  |       |
| <i>Ostrea contracta</i> , n. s., Conrad, 1856 ..... | 299   |

7.

NRAD, T. A. Descriptions of three new genera ; twenty-three new species of Middle Tertiary Fossils from California, and one from Texas. <Proc. Acad. Nat. Sci. Philadelphia, vol. viii, pp. 312-316, 1856. Philadelphia, 1857.

|                                                           | Page.   |
|-----------------------------------------------------------|---------|
| <i>Janira</i> , Shum. ....                                | 312     |
| <i>J. bella</i> , n. s., Conrad, 1857 .....               | 312-313 |
| <i>Pallium</i> , Klein .....                              | 313     |
| <i>P. estrellanum</i> , n. s., Conrad, 1857 .....         | 313     |
| <i>P. crassicardo</i> , n. s., Conrad, 1857 .....         | 313     |
| <i>Pecten</i> , Lin. ....                                 | 313     |
| <i>P. merrickii</i> , n. s., Conrad, 1857 .....           | 313     |
| <i>P. altiplectus</i> , n. s., Conrad, 1857 .....         | 313     |
| <i>Pachyderma</i> , Conrad . . .                          | 313     |
| <i>P. inezana</i> , n. s., Conrad, 1857 .....             | 313     |
| <i>Mulinia</i> , Gray .....                               | 313     |
| <i>M. densata</i> , n. s., Conrad, 1857 .....             | 313     |
| <i>Thracia</i> , Leach .....                              | 313     |
| <i>T. mactropis</i> , n. s., Conrad, 1857 .....           | 313     |
| <i>Mya</i> , Lin. ....                                    | 313     |
| <i>M. montereyana</i> , n. s., Conrad, 1857 .....         | 313-314 |
| <i>Arca</i> , Lin. ....                                   | 314     |
| <i>A. canalis</i> , n. s., Conrad, 1857 .....             | 314     |
| <i>A. trilineata</i> , n. s., Conrad, 1857 .....          | 314     |
| <i>A. congesta</i> , n. s., Conrad, 1857 .....            | 314     |
| <i>Azincæ</i> , Poli, <i>Pectunculus</i> , Lam .....      | 314     |
| <i>Azincæ barbarensis</i> , n. s., Conrad, 1857 .....     | 314     |
| <i>Arceopagia</i> .....                                   | 314     |
| <i>A. medialis</i> , n. s., Conrad, 1857 .....            | 314     |
| <i>Tapes</i> , Sowerby .....                              | 314     |
| <i>T. linteatum</i> , n. s., Conrad, 1857 .....           | 314     |
| <i>Oryctomya</i> , Conrad .....                           | 314     |
| <i>O. ovalis</i> , n. s., Conrad, 1857 .....              | 314     |
| <i>Ocyas</i> , Klein, <i>Lucina</i> , Lam. ....           | 314     |
| <i>Ocyas tetrica</i> , n. s., Conrad, 1857 .....          | 314     |
| <i>Spondylus estrallensis</i> , n. s., Conrad, 1857 ..... | 315     |
| <i>Dorinia</i> , Scopoli .....                            | 315     |
| <i>D. longula</i> , n. s., Conrad, 1857 .....             | 315     |
| <i>D. alta</i> , n. s., Conrad, 1857 .....                | 315     |
| <i>Lutraria</i> .....                                     | 315     |
| <i>L. transmontana</i> , n. s., Conrad, 1857 .....        | 315     |
| <i>Schizopyga</i> , n. g., Conrad, 1857 .....             | 315     |
| <i>S. californiana</i> , n. s., Conrad, 1857 .....        | 315     |
| <i>Tamiosoma</i> , n. g., Conrad, 1857 .....              | 315     |
| <i>T. gregaria</i> , n. s., Conrad, 1857 .....            | 315     |

## ECHINODERMA.

|                                                  | Page |
|--------------------------------------------------|------|
| <i>Astrodespina</i> , n. g., Conrad, 1857 .....  | 75   |
| <i>A. antiochæ</i> , n. a., Conrad, 1857 .....   | 75   |
| <i>Mollia texana</i> , n. a., Conrad, 1857 ..... | 76   |

## 8.

CONRAD, T. A. Description of the Tertiary Fossils collected on the Survey. <3-ports of Explorations and Surveys from the Mississippi River to the Pacific Ocean. Vol. vi, part ii, No. 2, pp. 63-73, pls. ii-v. Washington, 1857.

## CALIFORNIA FOSSILS.

| Univalves.                                                                 | Page  |
|----------------------------------------------------------------------------|-------|
| <i>Schizopyga</i> , n. a., Conrad, 1857 .....                              | 69    |
| <i>S. californiana</i> , n. a., Conrad, 1857, pl. ii, fig. 1 .....         | 69    |
| Bivalves.                                                                  |       |
| <i>Cryptomya</i> , Conrad, 1857 .....                                      | 69    |
| <i>C. vesalis</i> , Conrad, 1856, pl. ii, fig. 2 .....                     | 69    |
| <i>Phracia</i> , Leach .....                                               | 69    |
| <i>P. montreypiana</i> , Conrad, 1856, pl. ii, fig. 3 .....                | 69-70 |
| <i>Mya</i> , Lin. ....                                                     | 70    |
| <i>M. montreypiana</i> , Conrad, 1856, pl. ii, fig. 4 .....                | 70    |
| <i>M. sublineata</i> , n. a., Conrad, 1857, pl. ii, fig. 5 .....           | 70    |
| <i>Arcyptaria</i> , Leach .....                                            | 70    |
| <i>A. medialis</i> , Conrad, 1856, pl. ii, fig. 6 .....                    | 70    |
| <i>Fapes</i> , Sowerby .....                                               | 70    |
| <i>F. lineatum</i> , Conrad, 1856, pl. ii, fig. 7 .....                    | 70    |
| <i>Arca</i> , Lin. ....                                                    | 70    |
| <i>A. conus</i> , Conrad, 1856, pl. ii, fig. 8 .....                       | 70    |
| <i>A. trilineata</i> , Conrad, 1856, pl. ii, fig. 9 .....                  | 70    |
| <i>A. ovata</i> , Conrad, 1856, pl. ii, fig. 10 .....                      | 70-71 |
| <i>A. cincta</i> , Poli, <i>Pectenotus</i> , Lam. ....                     | 71    |
| <i>A. dardanensis</i> , n. a., Conrad, 1857, pl. iii, fig. 11 .....        | 71    |
| <i>Mulinia</i> , Gray .....                                                | 71    |
| <i>M. donata</i> , Conrad, 1856, pl. iii, fig. 12 .....                    | 71    |
| <i>Pecten</i> , Scopoli .....                                              | 71    |
| <i>P. longus</i> , Conrad, 1856 .....                                      | 71    |
| <i>P. alba</i> , Conrad, 1856, pl. iii, figs. 13 a, b .....                | 71    |
| <i>Pecten</i> , Lin. ....                                                  | 71    |
| <i>P. pallidus</i> , n. a., Conrad, 1857, pl. iii, fig. 14 .....           | 71    |
| <i>Pallium</i> , Klein .....                                               | 71    |
| <i>P. stellatum</i> , Conrad, 1856, pl. iii, fig. 15 .....                 | 71    |
| <i>Janina</i> , Shum. ....                                                 | 71    |
| <i>J. bella</i> , Conrad, 1856, pl. iv, fig. 16 .....                      | 71-72 |
| <i>Clema</i> , Lin. ....                                                   | 72    |
| <i>C. alba</i> , Conrad, 1853, pl. iv, fig. 17, and pl. v, fig. 17 a ..... | 72    |

## FOSSILS OF CATUN, ISTHMUS OF DARIEL.

|                                                                         |       |
|-------------------------------------------------------------------------|-------|
| <i>Mela</i> , Valenci. ....                                             | 72    |
| <i>M. rhyssa</i> , n. a., Conrad, 1857, pl. v, fig. 22 .....            | 72    |
| <i>Parvella</i> , Lam. ....                                             | 72    |
| <i>P. alba</i> , n. a., Conrad, 1857, pl. v, fig. 19 .....              | 72    |
| <i>P. palmaria</i> , n. a., Conrad, 1857, pl. v, fig. 20 .....          | 72    |
| <i>Pecten</i> , Lam. ....                                               | 72    |
| <i>Pecten</i> / Lam. ....                                               | 72    |
| <i>P. (Mytilus) darwini</i> , n. a., Conrad, 1857, pl. v, fig. 21 ..... | 72    |
| <i>Mytilus</i> , n. g., Conrad, 1857 .....                              | 72    |
| <i>P. pecten</i> , n. a., Conrad, 1857, pl. iv, fig. 18 .....           | 72-73 |
| <i>Pandora</i> , Lam. ....                                              | 73    |
| <i>P. alba</i> , Conrad, 1853, pl. v, fig. 25 .....                     | 73    |
| <i>Pecten</i> , Brug. ....                                              | 73    |
| <i>P. undulata</i> , Conrad, 1855, pl. v, fig. 24 .....                 | 73    |
| <i>Pandora</i> , Gray .....                                             | 73    |
| <i>P. undulata</i> , Conrad, 1855, pl. v, fig. 23 .....                 | 73    |

9.

CONRAD, T. A. Report on the Palaeontology of the Survey. <Reports of Explorations and Surveys from the Mississippi River to the Pacific Ocean. Vol. vii, part iii, pp. 189-196, plates i-x. Washington, 1857.

|                                                                         | Page.   |
|-------------------------------------------------------------------------|---------|
| <i>Hinnites</i> , DeFrance.....                                         | 190     |
| <i>H. crassa</i> , n. s., Conrad, 1857, pl. ii, figs. 1, 2.....         | 190     |
| <i>Pecten</i> , Lin.....                                                | 190     |
| <i>P. meeki</i> , n. s., Conrad, 1857, pl. i, fig. 1.....               | 190     |
| <i>P. deserti</i> , Conrad.....                                         | 190     |
| <i>P. discus</i> , n. s., Conrad, 1857, pl. iii, fig. 1.....            | 190-191 |
| <i>P. magnolia</i> , n. s., Conrad, 1857, pl. i, fig. 2.....            | 191     |
| <i>P. altiplicatus</i> , n. s., Conrad, 1857, pl. iii, fig. 2.....      | 191     |
| <i>Pallium</i> , Conrad.....                                            | 191     |
| <i>P. estrellanum</i> , n. s., Conrad, 1857, pl. iii, figs. 3, 4.....   | 191     |
| <i>Spondylus</i> , Rond., Lam.....                                      | 191     |
| <i>S. estrellanus</i> , n. s., Conrad, 1857, pl. i, fig. 3.....         | 191     |
| <i>Tapes</i> ? Mühlb.....                                               | 192     |
| <i>T. montana</i> , n. s., Conrad, 1857, pl. v, figs. 3, 5.....         | 192     |
| <i>T. inezensis</i> , n. s., Conrad, 1857, pl. vii, fig. 1.....         | 192     |
| <i>Venus</i> , Lin.....                                                 | 192     |
| <i>V. pajaroana</i> , n. s., Conrad, 1857, pl. iv, figs. 1, 2.....      | 192     |
| <i>Arcopagia</i> , Brown.....                                           | 192     |
| <i>A. unda</i> , n. s., Conrad, 1857, pl. iv, figs. 3, 4.....           | 192     |
| <i>Ocyas</i> , Klein, <i>Lucina</i> , Lam.....                          | 192     |
| <i>O. permacra</i> , n. s., Conrad, 1857, pl. vii, fig. 4.....          | 192     |
| <i>O. estrellana</i> , n. s., Conrad, 1857, pl. vi, fig. 6.....         | 192     |
| <i>Arca</i> , Lin.....                                                  | 192     |
| <i>A. obispoana</i> , n. s., Conrad, 1857, pl. v, fig. 1.....           | 192     |
| <i>Pachyderma</i> , Conrad.....                                         | 193     |
| <i>P. inezana</i> , n. s., Conrad, 1857, pl. v, figs. 2, 4.....         | 193     |
| <i>Orassatella</i> , Lam.....                                           | 193     |
| <i>O. collina</i> , n. s., Conrad, 1857, pl. vi, figs. 1, 2.....        | 193     |
| <i>Ostrea</i> , Lin.....                                                | 193     |
| <i>O. subjecta</i> , n. s., Conrad, 1857, pl. ii, fig. 3.....           | 193     |
| <i>O. panzana</i> , n. s., Conrad, 1857, pl. ii, fig. 4.....            | 193     |
| <i>Dorsina</i> Scopoli, <i>Aztemis</i> Poll.....                        | 193     |
| <i>D. alta</i> , n. s., Conrad, 1857, pl. —, fig. —.....                | 193     |
| <i>D. longula</i> , n. s., Conrad, 1857, pl. vii, fig. 2.....           | 193-194 |
| <i>D. montana</i> , n. s., Conrad, 1857, pl. vi, fig. 4.....            | 194     |
| <i>D. subobliqua</i> , n. s., Conrad, 1857, pl. vi, fig. 5.....         | 194     |
| <i>Mytilus</i> , Lin.....                                               | 194     |
| <i>M. inezensis</i> , n. s., Conrad, 1857, pl. viii, figs. 2, 3.....    | 194     |
| <i>Lutraria</i> , Lam.....                                              | 194     |
| <i>L. transmontana</i> , n. s., Conrad, 1857, pl. v, fig. 6.....        | 194     |
| <i>Azinea</i> , Sow., <i>Pectunculus</i> , Lam.....                     | 194     |
| <i>A. barbarensis</i> , n. s., Conrad, 1857, pl. vi, fig. 3.....        | 194     |
| <i>Maetra</i> ?.....                                                    | 194     |
| <i>M. ? gabiotensis</i> , n. s., Conrad, 1857, pl. vii, fig. 4.....     | 194     |
| <i>Glycimeris</i> , Lam., <i>Panopæa</i> , Menard.....                  | 194     |
| <i>G. estrellanus</i> , n. s., Conrad, 1857, pl. vii, fig. 5.....       | 194     |
| <i>Perna</i> , Lam.....                                                 | 195     |
| <i>P. montana</i> , n. s., Conrad, 1857, pl. —, fig. —.....             | 195     |
| <b>Univalves.</b>                                                       |         |
| <i>Trochita</i> .....                                                   | 195     |
| <i>T. costellata</i> , n. s., Conrad, 1857, pl. vii, fig. 3.....        | 195     |
| <i>Turritella</i> , Lam.....                                            | 195     |
| <i>T. inezana</i> , n. s., Conrad, 1857, pl. viii, fig. 4.....          | 195     |
| <i>T. variata</i> , n. s., Conrad, 1857, pl. viii, fig. 5.....          | 195     |
| <i>Natica</i> .....                                                     | 195     |
| <i>N. inezana</i> , n. s., Conrad, 1857, pl. x, figs. 5, 6.....         | 195     |
| <b>Multivalves.</b>                                                     |         |
| <i>Balanus estrellanus</i> , n. s., Conrad, 1857, pl. viii, fig. 1..... | 195     |
| <b>Echinoderm.</b>                                                      |         |
| <i>Astrodrapsis</i> , Conrad.....                                       | 196     |
| <i>A. antiochii</i> , n. s., Conrad, 1857, pl. x, figs. 1, 2.....       | 196     |

## 10.

CONRAD, T. A. Descriptions of Cretaceous and Tertiary fossils. <United States and Mexican Boundary Survey. Report of William H. Emory. Vol. i, part ii, pp. 141-174, pls. i-xxi. Washington, 1857.

|                                                                                   | Page    |
|-----------------------------------------------------------------------------------|---------|
| Eocene species.....                                                               | 141     |
| Cretaceous fossils from Oak Creek, Texas.....                                     | 141     |
| Cretaceous fossils from between Rio San Pedro and Rio Puerco.....                 | 142     |
| Cretaceous fossils from between El Paso and Frontera.....                         | 142     |
| Cretaceous fossils from Leon Springs.....                                         | 142     |
| Cretaceous fossils from Jacun, 3 miles below Laredo.....                          | 143     |
| Cretaceous fossils from Lapan Hills.....                                          | 143     |
| Cretaceous ? fossils from Dry Creek, Mexico.....                                  | 143     |
| Cretaceous fossils from various localities.....                                   | 143     |
| <i>Polypi:</i>                                                                    |         |
| <i>Turbinolia</i> , Lam.....                                                      | 144     |
| <i>T. texana</i> , n. s., Conrad, 1857, pl. ii, figs. 3 a, b.....                 | 144     |
| <i>Bivalves:</i>                                                                  |         |
| <i>Caprina</i> , D'Orbigny.....                                                   | 147     |
| <i>C. occidentalis</i> , Conrad, pl. ii, figs. 1 a-c.....                         | 147     |
| <i>C. planata</i> , Conrad, pl. ii, figs. 2 a, b.....                             | 147     |
| <i>Terebratula</i> , Lhwyd., Lam.....                                             | 147     |
| <i>T. wacoensis</i> , Roemer, pl. iii, fig. 1.....                                | 147     |
| <i>T. choctawensis</i> , Shumard.....                                             | 147     |
| <i>Trigonia</i> , Lam.....                                                        | 147     |
| <i>T. emoryi</i> , Conrad, pl. iii, fig. 2 a-c.....                               | 148     |
| <i>T. texana</i> , n. s., Conrad, 1857, pl. iii, figs. 3 a-c.....                 | 148     |
| <i>Mastra</i> , Lin., Lam.....                                                    | 148     |
| <i>M. texana</i> , Conrad, pl. iv, figs. 1 a, b.....                              | 148     |
| <i>Cucullaea</i> , Lam.....                                                       | 148     |
| <i>C. terminalis</i> , n. s., Conrad, 1857, pl. iv, figs. 2 a, b.....             | 148     |
| <i>Arca</i> , Lin.....                                                            | 148     |
| <i>A. subelongata</i> , n. s., Conrad, 1857, pl. vi, figs. 3 a, b.....            | 148     |
| <i>Arcopagia</i> .....                                                            | 148     |
| <i>A. texana</i> , Roemer, pl. iv, figs. 3 a, b.....                              | 148     |
| <i>Cardium</i> , Lin., Lam.....                                                   | 148     |
| <i>C. mediale</i> , n. s., Conrad, 1857, pl. iv, figs. 4 a, b.....                | 148     |
| <i>C. congestum</i> , n. s., Conrad, 1857, pl. vi, figs. 5 a-d.....               | 148     |
| Subgenus <i>Protocardia</i> , Beyrich.....                                        | 148     |
| <i>C. (Protocardia) multistriatum</i> , Shumard, pl. vi, figs. 4 a-c.....         | 148     |
| <i>C. (Protocardia) texanum</i> , n. s., Conrad, 1857, pl. v, figs. 6 a-c.....    | 150     |
| <i>C. (Protocardia) Alcockum</i> , n. s., Conrad, 1857, pl. vi, figs. 7 a, b..... | 150     |
| <i>Cardita</i> , Lam., Blainville.....                                            | 150     |
| <i>C. emicula</i> , n. s., Conrad, 1857, pl. vi, fig. 8.....                      | 150     |
| <i>Corbula</i> .....                                                              | 150     |
| <i>C. occidentalis</i> , n. s., Conrad, 1857, pl. vi, fig. 9.....                 | 150     |
| <i>Neithen</i> , Dronet.....                                                      | 150     |
| <i>N. occidentalis</i> , Conrad, pl. v, figs. 1 a, b.....                         | 150-151 |
| <i>N. texana</i> , Roemer, sp., pl. v, figs. 2 a, b.....                          | 151     |
| <i>Lima</i> .....                                                                 | 151     |
| <i>L. wacoensis</i> , Roemer, sp., pl. v, figs. 4 a, b.....                       | 151     |
| <i>L. leonensis</i> , n. s., Conrad, 1857, pl. v, figs. 3 a-c.....                | 151     |
| <i>Inoceramus</i> , Sowerby.....                                                  | 151     |
| <i>I. confertus-annulatus</i> , Roemer, sp., pl. v, fig. 5.....                   | 151     |
| <i>I. multilopata</i> , n. s., Conrad, 1857, pl. v, figs. 6 a, b.....             | 152     |
| <i>I. texanus</i> , n. s., Conrad, 1857, pl. v, fig. 7.....                       | 152     |
| <i>I. eripii</i> , Mantell, pl. v, fig. 8.....                                    | 152     |
| <i>Pholadomya</i> , Sowerby.....                                                  | 152     |
| <i>P. texana</i> , n. s., Conrad, 1857, pl. xix, fig. 3.....                      | 152     |
| <i>Astarte</i> Sowerby.....                                                       | 152     |
| <i>A. texana</i> , n. s., Conrad, 1857, pl. v, fig. 9.....                        | 152     |
| <i>Cytherea</i> , Lam.....                                                        | 152     |
| <i>C. leonensis</i> , n. s., Conrad, 1857, pl. vi, fig. 1.....                    | 152     |
| <i>C. texana</i> , n. s., Conrad, 1857, pl. vi, fig. 2.....                       | 152     |
| <i>Picatula</i> , Lam.....                                                        | 152     |



9.

CONRAD, T. A. Report on the Palaeontology of the Survey. <Reports of Explorations and Surveys from the Mississippi River to the Pacific Ocean. Vol. vii, part iii, pp. 189-196, plates i-x. Washington, 1857.

|                                                                         | Page.   |
|-------------------------------------------------------------------------|---------|
| <i>Hinnites</i> , DeFrance.....                                         | 190     |
| <i>H. crassa</i> , n. s., Conrad, 1857, pl. ii, figs. 1, 2.....         | 190     |
| <i>Pecten</i> , Lin.....                                                | 190     |
| <i>P. moehti</i> , n. s., Conrad, 1857, pl. i, fig. 1.....              | 190     |
| <i>P. deserti</i> , Conrad.....                                         | 190     |
| <i>P. discus</i> , n. s., Conrad, 1857, pl. iii, fig. 1.....            | 190-191 |
| <i>P. magnolia</i> , n. s., Conrad, 1857, pl. i, fig. 2.....            | 191     |
| <i>P. altiplicatus</i> , n. s., Conrad, 1857, pl. iii, fig. 2.....      | 191     |
| <i>Pallium</i> , Conrad.....                                            | 191     |
| <i>P. estrellanum</i> , n. s., Conrad, 1857, pl. iii, figs. 3, 4.....   | 191     |
| <i>Spondylus</i> , Rond., Lam.....                                      | 191     |
| <i>S. estrellanus</i> , n. s., Conrad, 1857, pl. i, fig. 3.....         | 191     |
| <i>Tapes</i> ? Mühlb.....                                               | 192     |
| <i>T. montana</i> , n. s., Conrad, 1857, pl. v, figs. 3, 5.....         | 192     |
| <i>T. inezensis</i> , n. s., Conrad, 1857, pl. vii, fig. 1.....         | 192     |
| <i>Venus</i> , Lin.....                                                 | 192     |
| <i>V. pajaroana</i> , n. s., Conrad, 1857, pl. iv, figs. 1, 2.....      | 192     |
| <i>Arcopagia</i> , Brown.....                                           | 192     |
| <i>A. unda</i> , n. s., Conrad, 1857, pl. iv, figs. 3, 4.....           | 192     |
| <i>Ocyas</i> , Klein, <i>Lucina</i> , Lam.....                          | 192     |
| <i>C. permactra</i> , n. s., Conrad, 1857, pl. vii, fig. 4.....         | 192     |
| <i>C. estrellana</i> , n. s., Conrad, 1857, pl. vi, fig. 6.....         | 192     |
| <i>Arca</i> , Lin.....                                                  | 192     |
| <i>A. obispoana</i> , n. s., Conrad, 1857, pl. v, fig. 1.....           | 192     |
| <i>Pachyderma</i> , Conrad.....                                         | 193     |
| <i>P. inezana</i> , n. s., Conrad, 1857, pl. v, figs. 2, 4.....         | 193     |
| <i>Crassatella</i> , Lam.....                                           | 193     |
| <i>C. collina</i> , n. s., Conrad, 1857, pl. vi, figs. 1, 2.....        | 193     |
| <i>Ostrea</i> , Lin.....                                                | 193     |
| <i>O. subjecta</i> , n. s., Conrad, 1857, pl. ii, fig. 3.....           | 193     |
| <i>O. panzana</i> , n. s., Conrad, 1857, pl. ii, fig. 4.....            | 193     |
| <i>Dosinia</i> Scopoli, <i>Azthemia</i> Poll.....                       | 193     |
| <i>D. alta</i> , n. s., Conrad, 1857, pl. —, fig. —.....                | 193     |
| <i>D. longula</i> , n. s., Conrad, 1857, pl. vii, fig. 2.....           | 193-194 |
| <i>D. montana</i> , n. s., Conrad, 1857, pl. vi, fig. 4.....            | 194     |
| <i>D. subobliqua</i> , n. s., Conrad, 1857, pl. vi, fig. 5.....         | 194     |
| <i>Mytilus</i> , Lin.....                                               | 194     |
| <i>M. inezensis</i> , n. s., Conrad, 1857, pl. viii, figs. 2, 3.....    | 194     |
| <i>Lutraria</i> , Lam.....                                              | 194     |
| <i>L. transemaniana</i> , n. s., Conrad, 1857, pl. v, fig. 6.....       | 194     |
| <i>Azinea</i> , Sow., <i>Pectunculus</i> , Lam.....                     | 194     |
| <i>A. barbarentis</i> , n. s., Conrad, 1857, pl. vi, fig. 3.....        | 194     |
| <i>Mastra</i> ?.....                                                    | 194     |
| <i>M. ? gabiotensis</i> , n. s., Conrad, 1857, pl. vii, fig. 4.....     | 194     |
| <i>Glycymeris</i> , Lam., <i>Panopaea</i> , Menard.....                 | 194     |
| <i>G. estrellanus</i> , n. s., Conrad, 1857, pl. vii, fig. 5.....       | 194     |
| <i>Perna</i> , Lam.....                                                 | 195     |
| <i>P. montana</i> , n. s., Conrad, 1857, pl. —, fig. —.....             | 195     |
| <b>Univalves.</b>                                                       |         |
| <i>Trochita</i> .....                                                   | 195     |
| <i>T. costellata</i> , n. s., Conrad, 1857, pl. vii, fig. 3.....        | 195     |
| <i>Turritella</i> , Lam.....                                            | 195     |
| <i>T. inezana</i> , n. s., Conrad, 1857, pl. viii, fig. 4.....          | 195     |
| <i>T. variata</i> , n. s., Conrad, 1857, pl. viii, fig. 5.....          | 195     |
| <i>Natica</i> .....                                                     | 195     |
| <i>N. inezana</i> , n. s., Conrad, 1857, pl. x, figs. 5, 6.....         | 195     |
| <b>Multivalves.</b>                                                     |         |
| <i>Balanus estrellanus</i> , n. s., Conrad, 1857, pl. viii, fig. 1..... | 195     |
| <b>Echinoderm.</b>                                                      |         |
| <i>Astrodapsis</i> , Conrad.....                                        | 196     |
| <i>A. antiochii</i> , n. s., Conrad, 1857, pl. x, figs. 1, 2.....       | 196     |

## 10.

CONRAD, T. A. Descriptions of Cretaceous and Tertiary fossils. < United States and Mexican Boundary Survey. Report of William H. Emory. Vol. i, part ii, pp. 141-174, pls. i-xxi. Washington, 1857.

|                                                                                 | Page    |
|---------------------------------------------------------------------------------|---------|
| Eocene species.....                                                             | 141     |
| Cretaceous fossils from Oak Creek, Texas.....                                   | 141     |
| Cretaceous fossils from between Rio San Pedro and Rio Puerco.....               | 142     |
| Cretaceous fossils from between El Paso and Frontera.....                       | 142     |
| Cretaceous fossils from Leon Springs.....                                       | 142     |
| Cretaceous fossils from Jacun, 3 miles below Laredo.....                        | 142     |
| Cretaceous fossils from Lapan Hills.....                                        | 142     |
| Cretaceous ? fossils from Dry Creek, Mexico.....                                | 142     |
| Cretaceous fossils from various localities.....                                 | 142     |
| <i>Polypi:</i>                                                                  |         |
| <i>Turbinolia</i> , Lam.....                                                    | 144     |
| <i>T. texana</i> , n. s., Conrad, 1857, pl. ii, figs. 3 a, b.....               | 144     |
| <i>Bivalves:</i>                                                                |         |
| <i>Caprina</i> , D'Orbigny.....                                                 | 147     |
| <i>C. occidentalis</i> , Conrad, pl. ii, figs. 1 a-c.....                       | 147     |
| <i>C. planata</i> , Conrad, pl. ii, figs. 2 a, b.....                           | 147     |
| <i>Terebratula</i> , Lhwyd., Lam.....                                           | 147     |
| <i>T. wacoensis</i> , Roemer, pl. iii, fig. 1.....                              | 147     |
| <i>T. choctawensis</i> , Shumard.....                                           | 147     |
| <i>Trigonia</i> , Lam.....                                                      | 147     |
| <i>T. emoryi</i> , Conrad, pl. iii, fig. 2 a-c.....                             | 148     |
| <i>T. texana</i> , n. s., Conrad, 1857, pl. iii, figs. 3 a-c.....               | 148     |
| <i>Maetra</i> , Lin., Lam.....                                                  | 148     |
| <i>M. texana</i> , Conrad, pl. iv, figs. 1 a, b.....                            | 148     |
| <i>Cucullea</i> , Lam.....                                                      | 148     |
| <i>C. terminialis</i> , n. s., Conrad, 1857, pl. iv, figs. 2 a, b.....          | 148     |
| <i>Arca</i> , Lin.....                                                          | 148     |
| <i>A. subelongata</i> , n. s., Conrad, 1857, pl. vi, figs. 3 a, b.....          | 148     |
| <i>Arcopecten</i> .....                                                         | 149     |
| <i>A. texana</i> , Roemer, pl. iv, figs. 3 a, b.....                            | 149     |
| <i>Cardium</i> , Lin., Lam.....                                                 | 149     |
| <i>C. mediale</i> , n. s., Conrad, 1857, pl. iv, figs. 4 a, b.....              | 149     |
| <i>C. congestum</i> , n. s., Conrad, 1857, pl. vi, figs. 5 a-d.....             | 149     |
| Subgenus <i>Protocardia</i> , Beyrich.....                                      | 149     |
| <i>C. (Protocardia) multistriatum</i> , Shumard, pl. vi, figs. 4 a-c.....       | 149     |
| <i>C. (Protocardia) texanum</i> , n. s., Conrad, 1857, pl. v, figs. 6 a-c.....  | 150     |
| <i>C. (Protocardia) flosum</i> , n. s., Conrad, 1857, pl. vi, figs. 7 a, b..... | 150     |
| <i>Cardita</i> , Lam., Blainville.....                                          | 150     |
| <i>C. eminula</i> , n. s., Conrad, 1857, pl. vi, fig. 8.....                    | 150     |
| <i>Corbula</i> .....                                                            | 150     |
| <i>C. occidentalis</i> , n. s., Conrad, 1857, pl. vi, fig. 9.....               | 150     |
| <i>Neithea</i> , Drouet.....                                                    | 150     |
| <i>N. occidentalis</i> , Conrad, pl. v, figs. 1 a, b.....                       | 150-151 |
| <i>N. texana</i> , Roemer, sp., pl. v, figs. 2 a, b.....                        | 151     |
| <i>Lima</i> .....                                                               | 151     |
| <i>L. wacoensis</i> , Roemer, sp., pl. v, figs. 4 a, b.....                     | 151     |
| <i>L. leonensis</i> , n. s., Conrad, 1857, pl. v, figs. 3 a-c.....              | 151     |
| <i>Inoceramus</i> , Sowerby.....                                                | 151     |
| <i>I. confertim-annulatus</i> , Roemer, sp., pl. v, fig. 5.....                 | 151     |
| <i>I. mytilopsis</i> , n. s., Conrad, 1857, pl. v, figs. 6 a, b.....            | 152     |
| <i>I. texanus</i> , n. s., Conrad, 1857, pl. v, fig. 7.....                     | 152     |
| <i>I. crispus</i> , Mantell, pl. v, fig. 8.....                                 | 152     |
| <i>Pholadomya</i> , Sowerby.....                                                | 152     |
| <i>P. texana</i> , n. s., Conrad, 1857, pl. xix, fig. 3.....                    | 152     |
| <i>Astarte</i> , Sowerby.....                                                   | 152     |
| <i>A. texana</i> , n. s., Conrad, 1857, pl. v, fig. 9.....                      | 152     |
| <i>Cytherea</i> , Lam.....                                                      | 152     |
| <i>C. leonensis</i> , n. s., Conrad, 1857, pl. vi, fig. 1.....                  | 152     |
| <i>C. texana</i> , n. s., Conrad, 1857, pl. vi, fig. 2.....                     | 152     |
| <i>Plicatula</i> , Lam.....                                                     | 152     |

|                                                                                                   | Page.   |
|---------------------------------------------------------------------------------------------------|---------|
| <i>P. incongrua</i> , n. s., Conrad, 1857, pl. vi, figa. 10 a, b . . . . .                        | 153     |
| <i>Ecogyra</i> , Say . . . . .                                                                    | 153     |
| <i>E. aristata</i> , Roemer, pl. vii, figa. 1 a-c . . . . .                                       | 153     |
| <i>E. fimbriata</i> , Conrad, pl. vii, figa. 2 a, b . . . . .                                     | 154     |
| <i>E. laeviuscula</i> , Roemer, pl. vii, figa. 4 a, b . . . . .                                   | 154     |
| <i>E. mathersoniana</i> , d'Orbigny, pl. viii, figa. 1 a-c, and pl. xi, figa. 1 a, b . . . . .    | 154     |
| <i>E. costata</i> var. Conrad, 1857, pl. viii, fig. 2 . . . . .                                   | 154     |
| <i>E. costata</i> , Say, pl. ix, figa. 1 and 2, and pl. x, fig. 1, and pl. viii, fig. 3 . . . . . | 154-155 |
| <i>E. fragosa</i> , Conrad, pl. viii, figa. 2 a, b . . . . .                                      | 155     |
| <i>Gryphaea</i> , Lam . . . . .                                                                   | 155     |
| <i>G. piteheri</i> , Morton, pl. vii, fig. 3, and pl. x, figa. 2 a, b . . . . .                   | 155     |
| <i>Ostrea</i> , Linn . . . . .                                                                    | 150     |
| <i>O. suboperculata</i> , Lyell & Sowerby, pl. x, figa. 3 a, b . . . . .                          | 155-156 |
| <i>O. bella</i> , n. s., Conrad, 1857, pl. x, figa. 4 a, b . . . . .                              | 156     |
| <i>O. lugubris</i> , n. s., Conrad, 1857, pl. x, figa. 5 a, b . . . . .                           | 156     |
| <i>O. carinata</i> , Lam., pl. x, fig. 6 . . . . .                                                | 156     |
| <i>O. vellicata</i> , n. s., Conrad, 1857, pl. xi, figa. 2 a, b . . . . .                         | 156     |
| <i>O. robusta</i> , n. s., Conrad, 1857, pl. xi, figa. 3 a, b . . . . .                           | 156-157 |
| <i>O. eortex</i> , n. s., Conrad, 1857, pl. xi, figa. 4 a-d . . . . .                             | 157     |
| <i>O. multirata</i> , n. s., Conrad, 1857, pl. xii, figa. 1 a-d . . . . .                         | 157     |
| bivalves :                                                                                        |         |
| <i>Natica</i> , Lam . . . . .                                                                     | 157     |
| <i>N. texana</i> , n. s., Conrad, 1857, pl. xiii, figa. 1 a, b . . . . .                          | 157     |
| <i>N. collina</i> , n. s., Conrad, 1857, pl. xiii, figa. 2 a, b . . . . .                         | 157     |
| <i>Rostellaria</i> ? Lam . . . . .                                                                | 157     |
| <i>R. ? collina</i> , n. s., Conrad, 1857, pl. xiii, figa. 3 a, b . . . . .                       | 157     |
| <i>R. ? collina</i> [texana], n. s., Conrad, 1857, pl. xiii, figa. 4 a, b . . . . .               | 158     |
| <i>Buccinopsis</i> . . . . .                                                                      | 158     |
| <i>B. parryi</i> , n. s., Conrad, 1857, pl. xiii, figa. 5 a, b . . . . .                          | 158     |
| <i>Turritella</i> , Lam . . . . .                                                                 | 158     |
| <i>T. planulateris</i> , n. s., Conrad, 1857, pl. xiv, figa. 1 a, b . . . . .                     | 158     |
| <i>Rostellites</i> , Conrad . . . . .                                                             | 158     |
| <i>R. texana</i> , Conrad, pl. xiv, figa. 2 a, b . . . . .                                        | 158     |
| <i>Nerinea</i> , DeFrance . . . . .                                                               | 158     |
| <i>N. schottii</i> , n. s., Conrad, 1857, pl. xiv, figa. 3 a, b . . . . .                         | 158-159 |
| <i>Nodosaria</i> , Lam . . . . .                                                                  | 159     |
| <i>N. texana</i> , n. s., Conrad, 1857, pl. xiv, figa. 4 a-c . . . . .                            | 159     |
| <i>Ammonites</i> , Lam . . . . .                                                                  | 159     |
| <i>A. pleurisepta</i> , n. s., Conrad, 1857, pl. xv, figa. 1 a-c . . . . .                        | 159     |
| <i>A. geniculatus</i> , n. s., Conrad, 1857, pl. xv, figa. 2 a, b . . . . .                       | 159     |
| <i>A. texanus</i> , Roemer, pl. xvi, figa. 1 a-d . . . . .                                        | 159-160 |
| <i>A. leonensis</i> , n. s., Conrad, 1857, pl. xvi, figa. 2 a, b . . . . .                        | 160     |
| TERTIARY FOSSILS.                                                                                 |         |
| <i>Ostrea</i> , Linn . . . . .                                                                    | 160     |
| <i>O. vespertina</i> , Conrad, pl. xvii, figa. 1 a-d . . . . .                                    | 160     |
| <i>O. veleniana</i> , n. s., Conrad, 1857, pl. xvii, figa. 2 a, b . . . . .                       | 160     |
| <i>O. contracta</i> , Conrad, pl. xviii, a-d . . . . .                                            | 160-161 |
| <i>Anomia</i> , Linn . . . . .                                                                    | 161     |
| <i>A. subcostata</i> , Conrad, pl. xix, figa. 1 a, b . . . . .                                    | 161     |
| <i>Cardita</i> , (Lam.) Blain . . . . .                                                           | 161     |
| <i>C. planicoosta</i> , Lam., pl. xix, figa. 2, a, b . . . . .                                    | 161     |
| <i>Orbula</i> , Lam . . . . .                                                                     | 161     |
| <i>C. narula</i> , Conrad, pl. xix, fig. 4 . . . . .                                              | 161     |
| <i>Venus vespertina</i> , n. s., Conrad, 1857, pl. xix, figa. 5 a, b . . . . .                    | 162     |
| <i>Oytheres</i> , Lam . . . . .                                                                   | 162     |
| <i>C. nuttallii</i> , Conrad, pl. iv, fig. 5 . . . . .                                            | 162     |
| <i>Volutakites</i> , Swainson . . . . .                                                           | 162     |
| <i>V. sayana</i> , Conrad, pl. xix, fig. 6 . . . . .                                              | 162     |
| <i>Natica</i> , Lam . . . . .                                                                     | 162     |
| <i>N. imula</i> , Conrad, pl. xix, fig. 7 . . . . .                                               | 162     |
| <i>Turritella</i> , Lam . . . . .                                                                 | 163     |
| <i>Turritella</i> , ———, Conrad, 1857, pl. xix, fig. 8 . . . . .                                  | 163     |
| <i>Cassidula</i> , Humphreys . . . . .                                                            | 163     |
| Subgenus <i>Lacinia</i> , Conrad . . . . .                                                        | 163     |
| <i>C. (Lacinia) alveata</i> , Conrad, pl. xix, fig. 9 . . . . .                                   | 163     |

## APPENDIX.

*Orstaceous fossils.*

|                                                                                | Page |
|--------------------------------------------------------------------------------|------|
| <i>Cardita subtelrica</i> , n. s., Conrad, 1857, pl. xxi, fig. 5 .....         | 11   |
| <i>Pholadomya sancti-sabæ</i> , Rømer, pl. xxi, fig. 4 .....                   | 11   |
| <i>Opsa</i> , Lam. ....                                                        | 11   |
| <i>C. tezana</i> , n. s., Conrad, 1857, pl. xxi, fig. 6 .....                  | 11   |
| <i>Terebratula leonensis</i> , n. s., Conrad, 1857, pl. xxi, fig. 2 .....      | 11   |
| <i>Turritella leonensis</i> , n. s., Conrad, 1857, pl. xxi, figs. 7 a, b ..... | 11   |
| <i>Hamites larvatus</i> , Conrad, pl. xxi, fig. 8 .....                        | 11   |

## 11.

Conrad, T. A. Check list of the Invertebrate Fossils of North America. Eocene and Oligocene. <Smithsonian miscellaneous collections, 200 pp., i-iv, and 1-4 Washington, 1866.

## NOTES AND EXPLANATIONS.

|                                                                                                                             | Page |
|-----------------------------------------------------------------------------------------------------------------------------|------|
| <i>Nummulites floridana</i> , Conrad= <i>Nemophora floridana</i> , Con. ....                                                | 11   |
| <i>Turbinolia goldfussii</i> , Lea= <i>Platytrochus goldfussii</i> (Lea), Edwards .....                                     | 11   |
| <i>Turbinolia stokesii</i> , Lea= <i>Platytrochus stokesii</i> (Lea), Edwards .....                                         | 11   |
| <i>Anthophyllum cuneiforme</i> , Conrad= <i>Flabellum cuneiforme</i> (Con.), Lonsdale .....                                 | 11   |
| <i>Turbonillia maclurii</i> , Lea= <i>Endopachys maclurii</i> (Lea), Conrad .....                                           | 11   |
| <i>Scutella lyelli</i> , Conrad= <i>Mortonia</i> ( <i>Periarchus</i> ) <i>lyelli</i> , Conrad .....                         | 11   |
| <i>Orbitolites interstitia</i> (Lea), <i>Lunulites</i> Gabb & Horn= <i>Lunulites interstitia</i> , Lea .....                | 11   |
| <i>Lunulites bouei</i> , Lea= <i>Discofustrellaria bouei</i> (Lea), Gabb & Horn .....                                       | 11   |
| <i>Orbitolites discoidea</i> Lea= <i>Capularia discoidea</i> (Lea), Gabb & Horn .....                                       | 11   |
| <i>Lunulites duclosii</i> , Lea= <i>Heteractis duclosii</i> (Lea), Gabb & Horn .....                                        | 11   |
| <i>Terebratula wilmingttonensis</i> , Lyell & Sowerby= <i>Rhynchonella wilmingttonensis</i> (Lyell & Sowerby), Conrad ..... | 11   |
| <i>Ostrea eversa</i> , Deshayes= <i>Gryphostrea eversa</i> (Deshayes), Conrad .....                                         | 11   |
| <i>Pecten calvatus</i> , Morton= <i>Camptonectes calvatus</i> (Morton), Conrad .....                                        | 11   |
| <i>Leda compta</i> , Gabb= <i>Nuculana compta</i> (Gabb), Conrad .....                                                      | 11   |
| <i>Nucula cuneiformis</i> , Rogers= <i>Nuculana cuneiformis</i> (Rogers), Conrad .....                                      | 11   |
| <i>Nucula magna</i> , Lea= <i>Nuculana magna</i> (Lea), Conrad .....                                                        | 11   |
| <i>Nucula media</i> , Lea= <i>Nuculana media</i> (Lea), Conrad .....                                                        | 11   |
| <i>Leda Oregona</i> , Shumard= <i>Nuculana Oregona</i> (Shumard), Conrad .....                                              | 11   |
| <i>Nucula ovula</i> , Lea= <i>Nuculana ovula</i> (Lea), Conrad .....                                                        | 11   |
| <i>Nucula parva</i> , Rogers= <i>Nuculana parva</i> (Rogers), Conrad .....                                                  | 11   |
| <i>Nucula plana</i> , Lea= <i>Nuculana plana</i> (Lea), Conrad .....                                                        | 11   |
| <i>Nucula plicata</i> , Lea= <i>Nuculana plicata</i> (Lea), Conrad .....                                                    | 11   |
| <i>Nucula pulcherrima</i> , Lea= <i>Nuculana pulcherrima</i> (Lea), Conrad .....                                            | 11   |
| <i>Nucula semen</i> , Lea= <i>Nuculana semen</i> (Lea), Conrad .....                                                        | 11   |
| <i>Cucullæa ononcheila</i> , Rogers= <i>Latiarca ononcheila</i> , (Rogers) Conrad .....                                     | 11   |
| <i>Cucullæa transversa</i> , Rogers= <i>Latiarca transversa</i> , (Rogers) Conrad .....                                     | 11   |
| <i>Arca rhomboidella</i> , Lea= <i>Anomolocardia rhomboidella</i> , (Lea) Conrad .....                                      | 11   |
| <i>Pectunculus ellipsis</i> , Lea= <i>Limopsis ellipsis</i> , (Lea) Conrad .....                                            | 11   |
| <i>Nucula pectuncularis</i> , Lea= <i>Limopsis pectuncularis</i> , (Lea) Conrad .....                                       | 11   |
| <i>Crenella concentrica</i> , Gabb= <i>Staligmium concentricum</i> , (Gabb) Conrad .....                                    | 11   |
| <i>Astarte minutissima</i> , Lea= <i>Micromeris minutissima</i> , (Lea) Conrad .....                                        | 11   |
| <i>Astarte parva</i> , Lea= <i>Micromeris parva</i> , (Lea) Conrad .....                                                    | 11   |
| <i>Egeria inflata</i> , Lea= <i>Sphaerella inflata</i> , (Lea) Conrad .....                                                 | 11   |
| <i>Dosinia gyrata</i> , Gabb= <i>Lucina gyrata</i> , (Gabb) Conrad .....                                                    | 11   |
| <i>Corbis lamellosa</i> , Conrad (not Lam.)= <i>Gafrarium kiratum</i> , Conrad .....                                        | 11   |
| <i>Cytherea lenticularis</i> , Rogers= <i>Dosiniopsis lenticularis</i> , (Rogers) Conrad .....                              | 11   |
| <i>Venus floridana</i> , Conrad= <i>Cryptogramma floridana</i> , Conrad .....                                               | 11   |
| <i>Venus penita</i> , Conrad= <i>Cryptogramma penita</i> , Conrad .....                                                     | 11   |
| <i>Cytherea ovata</i> , Rogers= <i>Dione ovata</i> , (Rogers) Conrad .....                                                  | 11   |
| <i>Egeria plana</i> , Lea= <i>Tellina plana</i> , (Lea) Conrad .....                                                        | 11   |
| <i>Anatina clabornensis</i> , Lea= <i>Periploma clabornensis</i> , (Lea) Conrad .....                                       | 11   |
| <i>Solen diegoensis</i> , Gabb= <i>Plectosolen diegoensis</i> , (Gabb) Conrad .....                                         | 11   |
| <i>Solen parallelus</i> , Gabb= <i>Plectosolen parallelus</i> , (Gabb) Conrad .....                                         | 11   |
| <i>Bulla dekayi</i> , Lea= <i>Cylichna dekayi</i> , (Lea) Conrad .....                                                      | 11   |
| <i>Actæon impressa</i> , Gabb= <i>Tornatellæa impressa</i> , (Gabb) Conrad .....                                            | 11   |
| <i>Pustinea striata</i> , Lea= <i>Actæonema striata</i> , (Lea) Conrad .....                                                | 11   |
| <i>Pustinea sulcata</i> , Lea= <i>Actæonema sulcata</i> , (Lea) Conrad .....                                                | 11   |



|                                                                                                               | Page. |
|---------------------------------------------------------------------------------------------------------------|-------|
| <i>Marginella buplicata</i> , Lea= <i>Ringicula buplicata</i> , (Lea) Conrad.....                             | 34    |
| <i>Melinia nitidula</i> , Meek= <i>Limnæa nitidula</i> , Meek.....                                            | 34    |
| <i>Limnæa tenuicostata</i> , M. & H.= <i>Limnæa (Pleurolimnæa) tenuicostata</i> , M. & H.....                 | 34    |
| <i>Bulinus limnæiformis</i> , M. & H.= <i>Spiraxia haynæi</i> , Meek.....                                     | 34    |
| <i>Helix spatiosa</i> , Meek= <i>Macrocyclus spatiosa</i> , (M. & H.) Meek.....                               | 34    |
| <i>Bulinus perverus</i> , M. & H.= <i>Clausilia coptraria</i> , (M. & H.) Meek.....                           | 34    |
| <i>Bulinus leres</i> , M. & H.= <i>Clausilia leres</i> , (M. & H.) Meek.....                                  | 34    |
| <i>Bulinus vermiculus</i> , M. & H.= <i>Clausilia vermicula</i> , (M. & H.) Meek.....                         | 34    |
| <i>Dentalium (Ditrupe) pusillum</i> , Gabb= <i>Gadus pusillus</i> , (Gabb) Conrad.....                        | 34    |
| <i>Ditrupe subcoarctata</i> , Gabb= <i>Gadus subcoarctatus</i> , (Gabb) Conrad.....                           | 34    |
| <i>Rotella nana</i> , Lea= <i>Umbonium nana</i> , (Lea) Conrad.....                                           | 34    |
| <i>Natica diegoana</i> , Conrad= <i>Vanikoro diegoana</i> , (Conrad) Meek.....                                | 34    |
| <i>Hipponyx pygmæa</i> , Lea= <i>Concholepas pygmæa</i> , (Lea) Conrad.....                                   | 34    |
| <i>Ocylptæra trochiformis</i> , Lea= <i>Trochita trochiformis</i> , (Lea) Conrad.....                         | 34    |
| <i>Galerus excentricus</i> , Gabb= <i>Galeropsis excentricus</i> , (Gabb) Conrad.....                         | 34    |
| <i>Turritella striata</i> , Lea= <i>Mesalia striata</i> , (Lea) Conrad.....                                   | 34    |
| <i>Melania multistriata</i> , M. & H.= <i>Campeloma multistriata</i> , (M. & H.) Meek.....                    | 34    |
| <i>Paludina multilineata</i> , M. & H.= <i>Campeloma multilineatum</i> , (M. & H.) Meek.....                  | 35    |
| <i>Paludina vetula</i> , M. & H.= <i>Campeloma vetulum</i> , (M. & H.) Meek.....                              | 35    |
| <i>Melania anthonii</i> , M. & H.= <i>Hydrobia anthonii</i> , M. & H.....                                     | 35    |
| <i>Melania minutula</i> , M. & H.= <i>Microgurgus minutulus</i> , M. & H.....                                 | 35    |
| <i>Natica alabamensis</i> , Whitfield= <i>Lacunaria alabamensis</i> , (Whitfield) Conrad.....                 | 35    |
| <i>Natica erecta</i> , Whitfield= <i>Lacunaria erecta</i> , (Whitfield) Conrad.....                           | 35    |
| <i>Melania humerosa</i> , M. & H.= <i>Tiara humerosa</i> , Meek.....                                          | 35    |
| <i>Cerithium nodulosum</i> , Hall= <i>Goniobasis? nodulosa</i> , (Hall) Meek.....                             | 35    |
| <i>Melania arcta</i> , M. & H.= <i>Goniobasis? arcta</i> , Meek.....                                          | 35    |
| <i>Cerithium fremontii</i> , Hall= <i>Goniobasis? fremontii</i> , (Hall) Meek.....                            | 35    |
| <i>Melania simpsoni</i> , Meek= <i>Goniobasis? simpsoni</i> , Meek.....                                       | 35    |
| <i>Melania sublaevis</i> , M. & H.= <i>Goniobasis? sublaevis</i> , (M. & H.) Meek.....                        | 35    |
| <i>Melania subtoruosa</i> , M. & H.= <i>Goniobasis? subtoruosa</i> , (M. & H.) Meek.....                      | 35    |
| <i>Melania tenuicarinata</i> , M. & H.= <i>Goniobasis? tenuicarinata</i> , (M. & H.) Meek.....                | 35    |
| <i>Cerithium tenerum</i> , Hall= <i>Goniobasis? tenera</i> , (Hall) Meek.....                                 | 35    |
| <i>Solarium henrici</i> , Lea= <i>Architectonica henrici</i> , (Lea) Conrad.....                              | 35    |
| <i>Solarium ornatum</i> , Lea= <i>Architectonica ornata</i> , (Lea) Conrad.....                               | 35    |
| <i>Delphinula plana</i> , Lea= <i>Architectonica plana</i> , (Lea) Conrad.....                                | 35    |
| <i>Solarium pseudogranulatum</i> , d'Orbigny= <i>Architectonica pseudogranulata</i> , (d'Orbigny) Conrad..... | 35    |
| <i>Delphinula depressa</i> , Lea= <i>Solariorbis depressus</i> , (Lea) Conrad.....                            | 35    |
| <i>Turbo lineatus</i> , Lea= <i>Solariorbis lineatus</i> , (Lea) Conrad.....                                  | 35    |
| <i>Planaria nitens</i> , Lea= <i>Solariorbis nitens</i> , (Lea) Conrad.....                                   | 35    |
| <i>Parithea aciculata</i> , Lea= <i>Eulima aciculata</i> , (Lea) Conrad.....                                  | 35    |
| <i>Parithea lugubris</i> , Lea= <i>Eulima lugubris</i> , (Lea) Conrad.....                                    | 35    |
| <i>Parithea notata</i> , Lea= <i>Eulima notata</i> , (Lea) Conrad.....                                        | 35    |
| <i>Parithea scale</i> , Lea= <i>Eulima scale</i> , (Lea) Conrad.....                                          | 35    |
| <i>Actæon melanellus</i> , Lea= <i>Obeliscus melanellus</i> , (Lea) Conrad.....                               | 35    |
| <i>Actæon pygmæus</i> , Lea= <i>Obeliscus pygmæus</i> , (Lea) Conrad.....                                     | 35    |
| <i>Actæon striatus</i> , Lea= <i>Obeliscus striatus</i> , (Lea) Conrad.....                                   | 35    |
| <i>Mitra costata</i> , Lea= <i>Pyramimitra costata</i> , (Lea) Conrad.....                                    | 35    |
| <i>Natica minima</i> , Lea= <i>Lunatia minima</i> , (Lea) Conrad.....                                         | 35    |
| <i>Natica alveata</i> , Conrad= <i>Ampullina alveata</i> , Conrad.....                                        | 35    |
| <i>Natica gibbosa</i> , Lea= <i>Neverita gibbosa</i> , (Lea) Conrad.....                                      | 35    |
| <i>Naticina obliqua</i> , Gabb= <i>Oatinus obliquus</i> , (Gabb) Conrad.....                                  | 35    |
| <i>Sycotypus penitus</i> , Conrad= <i>Ficopsis penitus</i> , Conrad.....                                      | 35    |
| <i>Buccinum soverbii</i> , Lea= <i>Semicassis soverbii</i> , (Lea) Conrad.....                                | 35    |
| <i>Fusus remondii</i> , Gabb= <i>Ficopsis remondii</i> , (Gabb) Conrad.....                                   | 36    |
| <i>Fusus cooperi</i> , Gabb= <i>Ficopsis cooperi</i> , (Gabb) Conrad.....                                     | 36    |
| <i>Ficus mammillatus</i> , Gabb= <i>Ficopsis mammillatus</i> , (Gabb) Conrad.....                             | 36    |
| <i>Hemifusus hornii</i> , Gabb= <i>Præcostus hornii</i> , (Gabb) Conrad.....                                  | 36    |
| <i>Mitra Flemingii</i> , Lea= <i>Caricella Flemingii</i> , (Lea) Conrad.....                                  | 36    |
| <i>Mitra fusoides</i> , Lea= <i>Oconomitra fusoides</i> , (Lea) Conrad.....                                   | 36    |
| <i>Mitra mooreana</i> , Gabb= <i>Lapparia mooreana</i> , (Gabb) Conrad.....                                   | 36    |
| <i>Mitra lineata</i> , Lea= <i>Fusimitra? lineata</i> , (Lea) Conrad.....                                     | 36    |
| <i>Mitra minima</i> , Lea= <i>Fusimitra? minima</i> , (Lea) Conrad.....                                       | 36    |
| <i>Fasciolaria moorei</i> , Gabb= <i>Cordieria moorei</i> , (Gabb) Conrad.....                                | 36    |
| <i>Fasciolaria plicata</i> , Lea= <i>Latirus (Peristernia) plicatus</i> , (Lea) Conrad.....                   | 36    |

|                                                                                                             | Page |
|-------------------------------------------------------------------------------------------------------------|------|
| <i>Ancillaria elongata</i> , Gabb = <i>Lamprodome elongata</i> , (Gabb) Conrad.....                         | 36   |
| <i>Oliva gracilis</i> , Lea = <i>Lamprodome gracilis</i> , (Lea) Conrad.....                                | 36   |
| <i>Olivia phillipsii</i> , Lea = <i>Lamprodome phillipsii</i> , (Lea) Conrad.....                           | 36   |
| <i>Anolax gigantea</i> , Lea = <i>Ancillopsis altile</i> , Conrad.....                                      | 36   |
| <i>Anolax plicata</i> , Lea = <i>Olivula plicata</i> , (Lea) Conrad.....                                    | 36   |
| <i>Agaronia punctulifera</i> , Gabb = <i>Olivula punctulifera</i> , (Gabb) Conrad.....                      | 36   |
| <i>Fusus taitii</i> , Lea = <i>Cornulina armigera</i> , Conrad.....                                         | 36   |
| <i>Monoceras sulcatum</i> , Lea = <i>Pseudoliva sulcata</i> , (Lea) Conrad.....                             | 36   |
| <i>Trilonium diegoensis</i> , Gabb = <i>Buccinofusus diegoensis</i> , (Gabb) Conrad.....                    | 36   |
| <i>Pleurotoma beaumontii</i> , Lea = <i>Surcula beaumontii</i> , (Lea) Conrad.....                          | 36   |
| <i>Pleurotoma caelata</i> , Lea = <i>Surcula caelata</i> , (Lea) Conrad.....                                | 36   |
| <i>Pleurotoma childreni</i> , Lea = <i>Surcula childreni</i> , (Lea) Conrad.....                            | 36   |
| <i>Pleurotoma desmoyersii</i> , Lea = <i>Surcula desmoyersii</i> , (Lea) Conrad.....                        | 36   |
| <i>Pleurotoma kellogii</i> , Gabb = <i>Surcula kellogii</i> , (Gabb) Conrad.....                            | 36   |
| <i>Pleurotoma monilifera</i> , Lea = <i>Surcula monilifera</i> , (Lea) Conrad.....                          | 36   |
| <i>Pleurotoma nodocarinata</i> , Gabb = <i>Surcula nodocarinata</i> , (Gabb) Conrad.....                    | 36   |
| <i>Pleurotoma obliqua</i> , Lea = <i>Surcula obliqua</i> , (Lea) Conrad.....                                | 36   |
| <i>Pleurotoma rugosa</i> , Lea = <i>Surcula rugosa</i> , (Lea) Conrad.....                                  | 36   |
| <i>Pleurotoma sayi</i> , Lea = <i>Surcula sayi</i> , (Lea) Conrad.....                                      | 36   |
| <i>Pleurotoma varicostata</i> , Gabb = <i>Surcula varicostata</i> , (Gabb) Conrad.....                      | 36   |
| <i>Pleurotoma lonsdalei</i> , Lea = <i>Drillia lonsdalei</i> , (Lea) Conrad.....                            | 36   |
| <i>Pleurotoma texana</i> , Gabb = <i>Drillia texana</i> , (Gabb) Conrad.....                                | 36   |
| <i>Papillina altile</i> , Conrad = <i>Clavifusus altile</i> , Conrad.....                                   | 36   |
| <i>Fusus cooperi</i> , Conrad = <i>Clavifusus cooperi</i> , Conrad.....                                     | 36   |
| <i>Fusus conybearii</i> , Lea = <i>Strepsidura conybearii</i> , (Lea) Conrad.....                           | 36   |
| <i>Palagus ranuzemi</i> , Conrad = <i>Aturia ranuzemi</i> , Conrad.....                                     | 36   |
| <i>Nautilus lamarchii</i> , Deshayes = <i>Cymomia lamarchii</i> , (Deshayes) Conrad.....                    | 36   |
| <i>Clavella Vicksburgensis</i> , Conrad = <i>Pistochelus Vicksburgensis</i> , (Con.) Mook.....              | 36   |
| <i>Nummulites mantelli</i> , Morton = <i>Orbitolites (Orbitoides) mantelli</i> , Morton.....                | 36   |
| <i>Scutella crustuloides</i> , Morton = <i>Mortonia (Periarchus) crustuloides</i> , (Mort.) Conrad.....     | 36   |
| <i>Scutella pilus-sinensis</i> , Ravenel = <i>Mortonia (Periarchus) pilus-sinensis</i> , (Rav.) Conrad..... | 36   |
| <i>Echinus infolatus</i> , Morton = <i>Oxiolepus infolatus</i> , (Morton) Desor.....                        | 36   |
| <i>Scutella jonesii</i> , Forbes = <i>Clypeaster jonesii</i> , (Forbes) Desor.....                          | 36   |
| <i>Scutella rogersi</i> , Morton = <i>Clypeaster rogersi</i> , (Morton) Conrad.....                         | 36   |
| <i>Mortonia tumida</i> , Conrad = <i>Clypeaster tumidus</i> , Conrad.....                                   | 36   |
| <i>Pyrgerhynchus mortoni</i> , Mich. = <i>Echinianthus mortoni</i> , (Mich.) Desor.....                     | 36   |
| <i>Catopygus patelleformis</i> , Bourv. = <i>Cassidulus patelleformis</i> , (Bourv.) Desor.....             | 36   |
| <i>Collepora tubulata</i> , Lonsdale = <i>Echakra tubulata</i> , (Lonsd.) Gabb & Horn.....                  | 36   |
| <i>Terebratula lachryma</i> , Morton = <i>Terebratulina lachryma</i> , (Mort.) Conrad.....                  | 36   |
| <i>Plagiostoma dumosa</i> , Morton = <i>Spondylus dumosus</i> , (Morton) Conrad.....                        | 36   |
| <i>Umbrella planulata</i> , Conrad = <i>Operculatum planulatum</i> , Conrad.....                            | 36   |
| <i>Dolopis</i> , n. g., Conrad = <i>Galeodes (Galeodaria) quinquecostata</i> , Conrad.....                  | 36   |

## 12.

CONRAD, T. A. [Description of a new genus and subgenus.] <Rep. U. S. Geol. and Geogr. Surv. Terr., F. V. Hayden, vol. ii. The vertebrata of the Cretaceous formations of the West by E. D. Cope, pp. 23-24. Washington, 1875.

|                                                              | Page  |
|--------------------------------------------------------------|-------|
| <i>Heplocephala</i> , n. g., Conrad, 1875.....               | 36    |
| <i>H. grandis</i> , n. s., Conrad, 1875.....                 | 36-37 |
| <i>Cuculifera</i> , n. s. g., Conrad, 1875.....              | 36    |
| <i>H. (Cuculifera) eccentrica</i> , n. s., Conrad, 1875..... | 36    |

### III.—THE WRITINGS OF JAMES DWIGHT DANA.

#### 1.

DANA, J. D. Zoophytes. <U. S. Expl. Exp. during the years 1838-1842 under the command of Charles Wilkes, U. S. N., vol. vii, pp. 1-741, Atlas pls. i-lxi. Philadelphia, 1846.

Many fossil genera are mentioned and discussed in this work.

#### 2.

DANA, J. D. Genera of Fossil Corals of the family Cyathophyllidæ. <Amer. Journ. Sci., 2d ser., vol. i, pp. 178-189, figs. 1-5. New Haven, 1846.

This article is extracted from the report of the United States Exploring Expedition during the years 1838-'42, under the command of Charles Wilkes, U. S. N. Zoophytes, by James D. Dana, Geologist of the Expedition, pp. 1-741. 4to. See entry No. 1.

|                                                                      | Page.   |
|----------------------------------------------------------------------|---------|
| Family <i>Cyathophyllidæ</i> .....                                   | 179-182 |
| <i>Cyathophyllum</i> .....                                           | 182-183 |
| <i>Calophyllum</i> , n. g., Dana, 1846 .....                         | 183-184 |
| <i>Amplexus</i> , Sowerby .....                                      | 184     |
| <i>Carinia</i> , Michelin .....                                      | 184     |
| <i>Acerularia</i> , Schweigger .....                                 | 184-186 |
| <i>Arachnophyllum</i> , n. g., Dana, 1846, fig. 1, p. 186 .....      | 186     |
| <i>Cystophyllum</i> , Lonsdale .....                                 | 186     |
| <i>Chirophyllum</i> , n. g., Dana, 1846, figs. 2 and 3, p. 187 ..... | 187     |
| <i>Michelinia</i> , Koninek .....                                    | 187     |
| <i>Columnaria</i> , Goldfuss, fig. 4, p. 188 .....                   | 188     |
| <i>Sarcinula</i> , Lamarck .....                                     | 188-189 |

#### 3.

DANA, J. D. Description of Fossil Shells of the collections of the Exploring Expedition under the command of Charles Wilkes, U. S. N., obtained in Australia, from the lower layers of the coal formation in Illawara, and from a deposit probably of nearly the same age at Harper's Hill, valley of the Hunter. <Amer. Journ. Sci., 2d ser., vol. iv. Appendix, pp. 151-160. New Haven, 1847.

|                                                                  | Page.   |
|------------------------------------------------------------------|---------|
| <i>Bellerophon undulatus</i> , n. s., Dana, 1847 .....           | 151     |
| <i>Bellerophon strictus</i> , n. s., Dana, 1847 .....            | 151     |
| <i>Platyschisma ? depressum</i> , n. s., Dana, 1847 .....        | 151     |
| <i>Pleurotomaria tri-flata</i> , n. s., Dana, 1847 .....         | 151     |
| <i>Pleurotomaria nuda</i> , n. s., Dana, 1847 .....              | 151     |
| <i>Natica</i> ——— ? Dana, 1847 .....                             | 151     |
| <i>Patella tenella</i> , n. s., Dana, 1847 .....                 | 151-152 |
| <i>Pentadia</i> , n. g., Dana, 1847 .....                        | 152     |
| <i>P. spatangus</i> , n. s., Dana, 1847 .....                    | 152     |
| <i>P. reniformis</i> , n. s., Dana, 1847 .....                   | 152     |
| <i>P. trigonia</i> , n. s., Dana, 1847 .....                     | 152     |
| <i>Lingula ovata</i> , n. s., Dana, 1847 .....                   | 152     |
| <i>Terebratula amygdala</i> , n. s., Dana, 1847 .....            | 152     |
| <i>Terebratula elongata</i> , n. s., Dana, 1847 .....            | 152     |
| <i>Productus fragilis</i> , n. s., Dana, 1847 .....              | 153     |
| <i>Solen (Soleourtus ?) ellipticus</i> , n. s., Dana, 1847 ..... | 153     |
| <i>Solen (Soleourtus ?) planulatus</i> , n. s., Dana, 1847 ..... | 153     |
| <i>Pholadomya undata</i> , n. s., Dana, 1847 .....               | 153     |
| <i>Allorisma audax</i> , n. s., Dana, 1847 .....                 | 153     |
| <i>Oleobia</i> , n. g., Dana, 1847 .....                         | 154     |
| <i>O. grandis</i> , n. s., Dana, 1847 .....                      | 154     |

|                                                         | Page    |
|---------------------------------------------------------|---------|
| <i>O. gracilis</i> , n. s., Dana, 1847 .....            | 154     |
| <i>O. f. recta</i> , n. s., Dana, 1847 .....            | 154     |
| <i>Astarte gemma</i> , n. s., Dana, 1847 .....          | 154-155 |
| <i>Astartilla</i> , n. g., Dana, 1847 .....             | 155     |
| <i>A. intrepida</i> , n. s., Dana, 1847 .....           | 155     |
| <i>A. cyprina</i> , n. s., Dana, 1847 .....             | 155     |
| <i>A. cythera</i> , n. s., Dana, 1847 .....             | 155     |
| <i>A. polita</i> , n. s., Dana, 1847 .....              | 155     |
| <i>A. cyclas</i> , n. s., Dana, 1847 .....              | 155     |
| <i>A. transversa</i> , n. s., Dana, 1847 .....          | 155-156 |
| <i>Cardinia</i> , Agassiz .....                         | 156     |
| <i>C. recta</i> , n. s., Dana, 1847 .....               | 156     |
| <i>C. cuneata</i> , n. s., Dana, 1847 .....             | 156     |
| <i>Pyramus</i> , n. g., Dana, 1847 .....                | 156-157 |
| <i>P. ellipticus</i> , n. s., Dana, 1847 .....          | 157     |
| <i>P. myiformis</i> , n. s., Dana, 1847 .....           | 157     |
| <i>Nucula abrupta</i> , n. s., Dana, 1847 .....         | 157     |
| <i>Nucula</i> ——— ? Dana, 1847 .....                    | 157     |
| <i>Cypriocardia rugulosa</i> , n. s., Dana, 1847 .....  | 157     |
| <i>Cypriocardia sinuosa</i> , n. s., Dana, 1847 .....   | 157-158 |
| <i>Myonia</i> , n. g., Dana, 1847 .....                 | 158     |
| <i>M. elongata</i> , n. s., Dana, 1847 .....            | 158     |
| <i>M. valida</i> , n. s., Dana, 1847 .....              | 158     |
| <i>Eurydesma ellipticon</i> , n. s., Dana, 1847 .....   | 158     |
| <i>Eurydesma globosa</i> , n. s., Dana, 1847 .....      | 158     |
| <i>Modiolopsis simplex</i> , n. s., Dana, 1847 .....    | 158     |
| <i>Modiolopsis siliqua</i> , n. s., Dana, 1847 .....    | 158     |
| <i>Modiolopsis praeurupta</i> , n. s., Dana, 1847 ..... | 158     |
| <i>Modiolopsis imbricata</i> , n. s., Dana, 1847 .....  | 158     |
| <i>Modiolopsis arcodes</i> , n. s., Dana, 1847 .....    | 158     |
| <i>Modiolopsis acutifrons</i> , n. s., Dana, 1847 ..... | 158-160 |
| <i>Aricula</i> ——— ? Dana, 1847 .....                   | 160     |
| <i>Pecten comptus</i> , n. s., Dana, 1847 .....         | 160     |
| <i>Pecten tenuicollis</i> , n. s., Dana, 1847 .....     | 160     |
| <i>Pecten tenuicollis</i> , n. s., Dana, 1847 .....     | 160     |

## 4.

DANA, J. D. Fossils of the Exploring Expedition under the command of Charles Wilkes, U. S. N., a fossil fish from Australia, and a Belemnite from Terra Del Fuego. <Am. Journ. Sci., vol. v, 2d ser., pp. 433-435. New Haven, 1848.

|                                                                                      | Page    |
|--------------------------------------------------------------------------------------|---------|
| <i>Pterothecus</i> , n. g., Dana, 1848 .....                                         | 432-434 |
| <i>P. australis</i> , n. s., Dana, 1848 .....                                        | 434     |
| <i>Helicerrus</i> , n. g., Dana, 1848 .....                                          | 434     |
| <i>H. fergusonis</i> , n. s., Dana, 1848 .....                                       | 434     |
| <i>Cardinia f. exilis</i> , McCoy = <i>Cardinia recta</i> , Dana .....               | 434     |
| <i>Pleurotomaria morrisiana</i> , McCoy = <i>Pleurotomaria triflata</i> , Dana ..... | 434     |
| <i>Pachydorus oratis</i> , McCoy .....                                               | 434     |
| <i>Pachydorus pusillus</i> , McCoy .....                                             | 434     |
| <i>Pachydorus sacculus</i> , McCoy .....                                             | 434     |
| <i>Eurydesma cordata</i> ? Morris .....                                              | 434     |
| <i>Notomys</i> , McCoy = <i>Pyramus</i> , Dana .....                                 | 434     |

## 5.

DANA, J. D. Descriptions of fossils. <U. S. Expl. Exp., 1838-'42, under the command of Charles Wilkes, U. S. N. Geology. By James D. Dana. Vol. x, Appendix, pp. 681-722, pars. Atlas, xxi, pls. pars. Philadelphia, 1849.

## APPENDIX I.

## FOSSILS OF NEW SOUTH WALES.

| Name                                            | Page    |
|-------------------------------------------------|---------|
| <i>Pterothecus</i> , Dana, 1848 .....           | 681     |
| <i>Pterothecus australis</i> , Dana, 1848 ..... | 681-682 |



|                                                                                                        | Page.   |
|--------------------------------------------------------------------------------------------------------|---------|
| <i>Mollusca</i> .....                                                                                  | 682     |
| <i>Brachiopoda</i> .....                                                                               | 682     |
| <i>Terebratula amygdala</i> , Dana, 1847 .....                                                         | 682     |
| <i>Terebratula elongata</i> , Dana, 1847, pl. i, figs. 3 a, b .....                                    | 682-683 |
| <i>Terebratula</i> ———, Dana, 1849, pl. i, figs. 4 a, b .....                                          | 683     |
| <i>Terebratula</i> ? ———, Dana, 1849, pl. i, fig. 5 .....                                              | 683     |
| <i>Spirifer glaber</i> , pl. i, fig. 6 a, b .....                                                      | 683     |
| <i>Spirifer darwini</i> (J. Morris), pl. i, fig. 7 a .....                                             | 684     |
| <i>Spirifer duodecicosatus</i> (McCoy), pl. ii, figs. 1 a, 1 b .....                                   | 684     |
| <i>Spirifer</i> ———, Dana, 1849, pl. ii, fig. 2 .....                                                  | 684     |
| <i>Spirifer vesperilia</i> (G. Sowerby), pl. ii, figs. 3 a-c .....                                     | 685     |
| <i>Spirifer phalana</i> , n. s., Dana, 1849, pl. ii, fig. 4 .....                                      | 685     |
| <i>Siphonotreta curta</i> , n. s., Dana, 1849, pl. ii, figs. 5 a, b .....                              | 685     |
| <i>Lingula ovata</i> , n. s., Dana, 1849, pl. ii, figs. 6 a, b .....                                   | 685-686 |
| <i>Productus fragilis</i> , Dana, pl. vii, figs. 7 a-c .....                                           | 686     |
| <i>Productus brachytharrus</i> (G. Sowerby), pl. ii, fig. 8 .....                                      | 686     |
| <i>Acephala</i> .....                                                                                  | 686     |
| <i>Solecurtus ellipticus</i> , Dana, pl. ii, fig. 9 .....                                              | 686     |
| <i>Solecurtus</i> ( <i>Psammobia</i> ?) <i>planulatus</i> , Dana, pl. ii, fig. 10 .....                | 686-687 |
| <i>Pholadomya</i> ( <i>Platymya</i> ) <i>undata</i> , Dana, pl. ii, figs. 11 a, b .....                | 687     |
| <i>Pholadomya</i> ( <i>Homomya</i> ) <i>glendonensis</i> , n. s., Dana, 1849, pl. ii, fig. 12 .....    | 687     |
| <i>Pholadomya</i> ( <i>Homomya</i> ) <i>audax</i> , Dana, pl. iii, figs. 1 a-c .....                   | 687     |
| <i>Pholadomya</i> ( <i>Homomya</i> ) <i>curvata</i> (?) (J. Morris), Dana, pl. iii, figs. 2 a, b ..... | 687     |
| <i>Astarte gemma</i> , Dana, pl. iii, figs. 4 a, b .....                                               | 688     |
| <i>Astarte</i> , Dana, 1847 .....                                                                      | 688     |
| <i>A. intrepida</i> , Dana, 1847, pl. iii, figs. 5, 5 a .....                                          | 689     |
| <i>A. cyprina</i> , Dana, 1847, pl. iii, figs. 6, 6 a .....                                            | 689     |
| <i>A. cytherea</i> , Dana, 1847, pl. iv, figs. 1, 1 a .....                                            | 689     |
| <i>A. polita</i> , Dana, 1847, pl. iv, figs. 2 a-c .....                                               | 690     |
| <i>A. cyclos</i> , Dana, 1847, pl. iv, figs. 3, 3 a .....                                              | 690     |
| <i>A. transversa</i> , Dana, 1847, pl. iv, figs. 4 a, b .....                                          | 690     |
| <i>A. corpulenta</i> , n. s., Dana, 1849, pl. iii, figs. 3 a-c .....                                   | 691     |
| <i>Cardinia recta</i> , Dana, pl. iv, figs. 5 a, b .....                                               | 691     |
| <i>Cardinia</i> ? <i>cuneata</i> , Dana, pl. iv, figs. 6, 6 a-c .....                                  | 692     |
| <i>Cardinia</i> ? <i>costata</i> (J. Morris), Dana, pl. iv, figs. 8 a-c .....                          | 692     |
| <i>Pachydomus</i> .....                                                                                | 692-693 |
| <i>P. cuneatus</i> (J. D. Sowerby), Morris, pl. v, figs. 1, 1 a .....                                  | 693     |
| <i>P. antiquatus</i> , (J. D. Sowerby), Morris, pl. v, fig. 2 .....                                    | 693-694 |
| <i>P. levis</i> (J. D. Sowerby), Morris .....                                                          | 694     |
| <i>Mæonia</i> , Dana .....                                                                             | 694     |
| <i>Mæonia</i> , Dana .....                                                                             | 694     |
| <i>Pyramia</i> , Dana .....                                                                            | 695     |
| <i>Cleobia</i> , Dana .....                                                                            | 695     |
| <i>Mæonia elongata</i> , Dana, 1847, pl. v, figs. 3 a-c .....                                          | 695     |
| <i>M. valida</i> , Dana, 1847, pl. v, figs. 4 a-b .....                                                | 695     |
| <i>M. azinia</i> , Dana, 1847, pl. v, figs. 5 a, b .....                                               | 696     |
| <i>M. ? carinata</i> (J. Morris), Dana, pl. vi, figs. 1 a, b .....                                     | 696     |
| <i>M. fragilis</i> , n. s., Dana, 1849, pl. vi, figs. 2, 3 .....                                       | 696-697 |
| <i>M. myiformis</i> , Dana, 1847, pl. vi, fig. 4 a .....                                               | 697     |
| <i>M. elliptica</i> , Dana, 1849, pl. vi, fig. 5 a, c .....                                            | 697     |
| <i>M. gigas</i> (M'Coy), Dana .....                                                                    | 697     |
| <i>M. grandis</i> , Dana, 1847, pl. vi, fig. 7 .....                                                   | 697-698 |
| <i>M. gracilis</i> , Dana, 1847, pl. vii, figs. 1 a, c .....                                           | 698     |
| <i>M. ? recta</i> , Dana, 1847, pl. vii, fig. 2 .....                                                  | 698     |
| <i>Nucula abrupta</i> , Dana, 1847, pl. vii, fig. 3 .....                                              | 698     |
| <i>Nucula concinna</i> , n. s., Dana, 1849, pl. vii, fig. 4 .....                                      | 699     |
| <i>Nucula glendonensis</i> , n. s., Dana, 1849, pl. vii, fig. 5 .....                                  | 699     |
| <i>Eurydesma</i> , Morris .....                                                                        | 699     |
| <i>E. elliptica</i> , Dana, 1847, pl. vii, figs. 6 a-d .....                                           | 700     |
| <i>E. globosa</i> , Dana, 1847, pl. vii, figs. 7, 7 a .....                                            | 700     |
| <i>E. saeculus</i> (M'Coy), Dana, pl. vii, figs. 8 a, b .....                                          | 700     |
| <i>E. cordata</i> (Morris) .....                                                                       | 700-701 |
| <i>Cardium australe</i> (M'Coy), Dana, pl. viii, fig. 2 .....                                          | 701     |
| <i>Cardium ferox</i> , n. s., Dana, 1849, pl. viii, fig. 3 .....                                       | 701     |
| <i>Cypriocardia</i> .....                                                                              | 701-702 |

|                                                                                               | Page    |
|-----------------------------------------------------------------------------------------------|---------|
| <i>C. acutifrons</i> , Dana, 1847, pl. viii, figs. 4 a, b.....                                | 702     |
| <i>C. imbricata</i> , Dana, 1847, pl. viii, fig. 5.....                                       | 702     |
| <i>C. arcodes</i> , Dana, 1847, pl. viii, figs. 8 a, b.....                                   | 702-703 |
| <i>C. prærupta</i> , Dana, 1847, pl. viii, fig. 10.....                                       | 703     |
| <i>C. siliqua</i> , Dana, 1847, pl. ix, figs. 1 a, b.....                                     | 703     |
| <i>C. simplex</i> , Dana, 1847, pl. ix, fig. 2.....                                           | 702-704 |
| <i>C. (Avicula?) veneris</i> , Dana, 1847, pl. ix, figs. 3 a, b.....                          | 704     |
| <i>Avicula volgensis?</i> (Verneuil), pl. ix, fig. 4.....                                     | 704     |
| <i>Pterinea macroptera</i> (J. Morris).....                                                   | 704     |
| <i>Pecten comptus</i> , Dana, 1847, pl. ix, fig. 5.....                                       | 704     |
| <i>Pecten tenuisculus</i> , Dana, 1847, pl. ix, figs. 6 a, 6 b.....                           | 704-705 |
| <i>Pecten tenuicollis</i> , Dana, 1847, pl. ix, fig. 7.....                                   | 705     |
| <i>Pecten mitis</i> , n. s., Dana, 1849, pl. ix, figs. 8 a, b.....                            | 705     |
| <i>Pecten illawarrensis</i> (J. Morris), pl. ix, fig. 9.....                                  | 705     |
| <i>Pecten squamuliferus</i> (J. Morris).....                                                  | 705     |
| ———?, pl. ix, fig. 10, Dana, 1849.....                                                        | 705-706 |
| <b>Gasteropoda.</b>                                                                           |         |
| <i>Pileopsis tenella</i> , Dana, 1847, pl. ix, figs. 13 a, b.....                             | 706     |
| <i>Pileopsis alta</i> , n. s., Dana, 1849, pl. ix, fig. 14 a.....                             | 706     |
| <i>Pleurotomaria morrisiana</i> , McCoy, pl. ix, figs. 15, 15 a, 16.....                      | 706     |
| <i>Pleurotomaria nuda</i> , Dana, 1847, pl. ix, figs. 17 a-c.....                             | 706     |
| <i>Pleurotomaria strzeleckiana</i> , Morris.....                                              | 707     |
| <i>Platychisma oculus</i> (Morris), pl. x, fig. 1.....                                        | 707     |
| <i>Platychisma rotundatum</i> , Morris.....                                                   | 707     |
| <i>Platychisma depressum</i> , Dana, 1847, pl. x, figs. 2 a, b.....                           | 707     |
| <i>Natica</i> ———? Dana, 1847, pl. x, figs. 2 a, b.....                                       | 707     |
| <i>Bellerophon undulatus</i> , Dana, 1847, pl. x, figs. 4 a, b.....                           | 707     |
| <i>Bellerophon strictus</i> , Dana, 1847, pl. x, figs. 5 a, b.....                            | 707-708 |
| <i>Bellerophon micromphalus</i> , Morris, pl. x, figs. 6 a, b.....                            | 708     |
| <b>Cephalopoda.</b>                                                                           |         |
| <i>Theca lanceolata</i> (Morris), pl. x, figs. 7 a, b.....                                    | 708     |
| <i>Conularia</i> .....                                                                        | 708-709 |
| <i>C. inornata</i> , n. s., Dana, 1849, pl. x, fig. 8.....                                    | 709-710 |
| <i>C. levigata</i> , Morris, pl. x, fig. 9.....                                               | 710     |
| <i>C. tenuistriata?</i> (McCoy).....                                                          | 710     |
| <b>Radiata.</b>                                                                               |         |
| <i>Fenestella internata</i> (Lonsdale), pl. x, fig. 13.....                                   | 710     |
| <i>Fenestella media</i> , n. s., Dana, 1849, pl. x, figs. 14, 14 a, and fig. 15.....          | 710     |
| <i>Fenestella ampla</i> (Lonsdale), pl. xi, figs. 1, 1 a; 2, 2 a.....                         | 710     |
| <i>Fenestella fossula</i> (Lonsdale), pl. xi, figs. 3 a, b.....                               | 710-711 |
| <i>Fenestella gracilis</i> , n. s. (Dana), 1849, pl. xi, fig. 4.....                          | 711     |
| <i>Fenestella</i> , pl. xi, figs. 5, 5 a.....                                                 | 711     |
| <i>Chetetes crinita</i> (Lonsdale), Dana, pl. xi, figs. 6, 6 a-c.....                         | 711     |
| <i>Chetetes tasmaniensis</i> (Lonsdale), Dana, pl. xi, figs. 7, 7 a, 8, 8 a.....              | 711     |
| <i>Chetetes ovata</i> (Lonsdale), Dana, pl. xi, figs. 9, 9 a, b.....                          | 712     |
| <i>Chetetes gracilis</i> , n. s., Dana, 1849, pl. xi, figs. 10, 10 a-c.....                   | 712     |
| <i>Hemitrypa?</i> , pl. xv, fig. 10.....                                                      | 712     |
| <i>Enerini?</i> al remains, pl. xi, figs. 12 a, b, and pl. xi, figs. 13, 14, and fig. 15..... | 712     |
| <i>Pentadia</i> , Dana, 1847.....                                                             | 712-713 |
| <i>Pentadia corona</i> , pl. x, figs. 10, 10 a-c, 11 and 12.....                              | 713     |
| <b>FOSSIL PLANTS.</b>                                                                         |         |
| <b>Conifera.</b>                                                                              |         |
| Fruit scales, pl. xii, figs. 1, 2, 3, 4, 5 a, b, 6, 7, 8, 8 a-d.....                          | 714     |
| <i>Naggetharia</i> , n. g., Dana, 1849.....                                                   | 715     |
| <i>N. spatulata</i> , n. s., Dana, 1849, pl. xii, fig. 9.....                                 | 715     |
| <i>N. media</i> , n. s., Dana, 1849, pl. xii, fig. 10.....                                    | 715     |
| <i>N. elongata</i> (J. Morris), Dana, 1849, pl. xii, fig. 11.....                             | 715     |
| <i>Sphenopteris lobifolia</i> (Morris), pl. xii, fig. 12.....                                 | 715-716 |
| <i>Glossopteris browniana</i> (Brongniart), pl. xii, figs. 13, 13 a-c, 14 (Young?).....       | 716-717 |
| <i>Glossopteris ampla</i> , n. s., Dana, 1849, pl. xiii, fig. 13, a, b.....                   | 717     |
| <i>Glossopteris reticulum</i> , n. s., Dana, 1849, pl. xiii, figs. 2, 3.....                  | 717-718 |
| <i>Glossopteris elongata</i> , n. s., Dana, 1849, pl. xiii, fig. 4.....                       | 718     |
| <i>Glossopteris?</i> cordata, n. s., Dana, 1849, pl. xiii, fig. 5.....                        | 718     |
| <i>Glossopteris linearis</i> (McCoy).....                                                     | 718     |

|                                                                         | Page.   |
|-------------------------------------------------------------------------|---------|
| <i>Phyllothea australis</i> , pl. xlii, fig. 6, pl. xiv, figs. 1 [2?].  | 718-719 |
| <i>Clasteria</i> , n. g., Dana, 1849                                    | 719     |
| <i>C. australis</i> , n. s., Dana, 1849                                 | 719-720 |
| <i>Anarthrocanna australis</i> , n. s., Dana, 1849, pl. xiv, fig. 6 a   | 720     |
| <i>Oystoseirites</i> ? pl. xiv, fig. 6, b.                              | 720     |
| <i>Austrella rigida</i> , n. s., Dana, 1849, pl. xiv, figs. 7, 8.       | 720     |
| <i>Conferites</i> ? <i>tenella</i> , n. s., Dana, 1849, pl. xiv, fig. 9 | 720     |

FOSSILS FROM TIERRA DEL FUEGO.

|                                                |         |
|------------------------------------------------|---------|
| <i>Helicervus</i> , Dana, 1848                 | 720     |
| <i>H. fuegiensis</i> Dana, pl. xv, fig. 1 a-c. | 720-721 |

FOSSILS FROM SAN LORENZO, PERU.

|                                                                     |     |
|---------------------------------------------------------------------|-----|
| <i>Trigonia Lorentii</i> , n. s. (Dana), 1849, pl. xv, fig. 2 a-c.  | 721 |
| <i>Turbo</i> ———, Dana, 1849, pl. xv, fig. 3 a, b                   | 721 |
| <i>Nautilus tenui-planatus</i> , n. s., Dana, 1849, pl. xv, fig. 4. | 721 |

FOSSIL AMMONITE FROM THE ANDES.

|                                                     |     |
|-----------------------------------------------------|-----|
| <i>Ammonites pickeringi</i> , Dana, pl. xv, fig. 5. | 721 |
| <i>Ammonites</i> , pl. xv, fig. 6.                  | 721 |
| <i>Ostraca</i> vol. xv, fig. 7.                     | 722 |

FOSSILS FROM NORTHWESTERN AMERICA.

|                                                                                         |         |
|-----------------------------------------------------------------------------------------|---------|
| <i>Cetacean</i> , pl. xvi, fig. 1.                                                      | 722     |
| Fishes, pl. xvi, fig. 2, pl. xvi, fig. 3, pl. xvii, figs. 1, 2 a, 2 b.                  | 722     |
| <i>Crustacea</i> .                                                                      |         |
| <i>Callianassa oregonensis</i> , n. s., Dana, 1849                                      | 722-723 |
| <i>Balanus</i> ———! Dana, pl. xvii, fig. 4.                                             | 723     |
| <i>Radiata</i> .                                                                        |         |
| <i>Galerites oregonensis</i> , n. s., Dana, 1849, figs. 5, 6, 6 a, pl. xxi, figs. 7, 8. | 720     |





## IV.—THE WRITINGS OF CHRISTIAN GOTTFRIED EHRENBERG.

### 1.

EHRENBERG, C. G. On Infusorial Deposits on the River Chutes in Oregon. Amer. Jour. Sci., 2d ser., Vol. IX, p. 140. New Haven, 1850.

A brief notice of the author's work in the Monatsb. Akad., Berlin, February, 1849, p. 76.

### 2.

EHRENBERG, C. G. Über das mächtigste bis jetzt bekannt gewordene (angeblich 500 Fuss mächtige) Lager von mikroskopischen reinen kieselschaligen Süßwasser-Formen am Wasserfall-Flusse im Oregon. <Bericht über die zur Bekanntmachung geeigneten Verhandlungen der Königl. Preuss. Akademie der Wissenschaften zu Berlin aus dem Jahre 1849. February. pp. 76-87. Berlin, 1850.

*Amphora libyca.*  
*Campylodiscus ameria.*?  
*Coroneis finnica.*  
*O. concentrica.*  
*C. gemmata.*  
*C. lineata.*  
*C. oblonga.*  
*C. protexta.*  
*C. punctata.*  
*Corconema asperum.*  
*C. cistula.*  
*C. gibbum.*  
*C. gracile.*  
*C. lanceolatum.*  
*C. lunula.*  
*Discoplea oregonica.*  
*Eunotia amphioxys.*  
*E. argus.*  
*E. gibba.*  
*E. gibberula.*  
*E. granulata.*  
*E. librilla.*  
*E. subulata.*  
*E. textricula.*  
*E. uncinata.*  
*E. westermanni.*  
*E. zebra.*  
*E. zebrina.*  
*Fragilaria acuta.*  
*F. amphicephala.*  
*F. rhabdosoma.*  
*Glaucanema paradoxum.*?  
*Gomphonema gracile.*  
*G. herculaneum.*  
*G. longicollis.*  
*G. mamilla.*  
*G. minutissimum.*  
*G. olar.*  
*G. oregonicum.*  
*Gallionella crenata.*  
*G. distans.*  
*G. granulata.*  
*G. laevigata.*  
*G. punctata.*

*G. undulata.*  
*Himantidium arcus.*  
*Navicula sigma.*  
*N. bacillum.*  
*N. scalprum.*  
*N. semen.*  
*N. sifcula.*  
*Pinnularia affinis.*  
*P. amphioxys.*  
*P. digitum.*  
*P. gastrum.*  
*P. macilenta.*  
*P. mesogongyla.*  
*P. pachyptera.*  
*P. placentula.*  
*P. oregonica.*  
*P. viridis.*  
*P. viridula.*  
*Podosphenia pupula.*  
*Rhaphoneis foliacea.*  
*R. lanceolata.*  
*R. oregonica.*  
*Surirella bifrons.*  
*S. plicata.*  
*Stanronia baileyi.*  
*S. semen.*  
*Synedra ulna.*  
*S. appendica.*  
*Amphidiscus armatus.*  
*Lithodontium furcatum.*  
*L. nasutum.*  
*L. scorpius.*  
*Lithostylidium amphiodon.*  
*L. crenulatum.*  
*L. laeve.*  
*L. quadratum.*  
*L. rude.*  
*L. trabecula.*  
*Lithostylidium.*?  
*Spongolithis acicularis.*  
*S. aspera.*  
*S. fustis.*  
*S. inflexa.*  
*S. mesogongyla.*

1

2

3

4

5

6

7

8

## V.—THE WRITINGS OF JAMES HALL.

### 1.

LL, JAMES. Organic remains. Descriptions of organic remains collected by Captain J. C. Frémont, in the geographical survey of Oregon and North California. <Rep. Expl. Exp. to the Rocky Mountains and to Oregon and North California, by J. C. Frémont. Appendix B, pp. 304-310, pls. i-iv. Washington, 1845.

|                                                                                   | Page.   |
|-----------------------------------------------------------------------------------|---------|
| <i>Sphenopteris fremonti</i> , n. s., Hall, 1845, pl. ii, figs. 3, 3 a.....       | 304     |
| <i>S. triloba</i> , n. s., Hall, 1845, pl. i, fig. 8.....                         | 304     |
| <i>S. (?) paucifolia</i> , n. s., Hall, 1845, pl. ii, figs. 1 a-d.....            | 304-305 |
| <i>S. (?) trifoliata</i> , n. s., Hall, 1845, pl. ii, figs. 2, 2 a.....           | 305     |
| <i>Glossopteris phillipsii</i> , n. s., Hall, 1845, pl. ii, figs. 5, 5 a-c.....   | 305-306 |
| <i>Pecopteris undulata</i> , n. s., Hall, 1845, pl. i, figs. 1, 1 a.....          | 306     |
| <i>Pecopteris undulata</i> var., Hall, 1845, pl. i, figs. 2, 2 a, b.....          | 306     |
| <i>Pecopteris (?) odontopteroides</i> , n. s., Hall, 1845, pl. i, figs. 3, 4..... | 306     |
| <i>Trichopteris</i> , n. g., Hall, 1845.....                                      | 306     |
| <i>T. filamentosa</i> , n. s., Hall, 1845, pl. ii, fig. 6.....                    | 306-307 |
| <i>T. gracilis</i> , n. s., Hall, 1845, pl. i, fig. 5.....                        | 307     |
| Stems of ferns, pl. i, fig. 7.....                                                | 307     |
| Leaf of a Dicotyledonous plant (?), pl. ii, fig. 4.....                           | 307     |
| <i>Mya tellinoidea</i> , n. s., Hall, 1845, pl. iii, figs. 1, 2.....              | 307     |
| <i>Nucula impressa</i> , (?) n. s., Hall, 1845, pl. iii, fig. 3.....              | 308     |
| <i>Oytherea parvula</i> , n. s., Hall, 1845, pl. iii, figs. 10, 10 a.....         | 308     |
| <i>Pleurotomaria uniaugulata</i> , n. s., Hall, 1845, pl. iii, figs. 4, 5.....    | 308     |
| <i>Cerithium tenerum</i> , n. s., Hall, 1845, pl. iii, figs. 6, 6 a.....          | 308     |
| <i>Cerithium fremonti</i> , n. s., Hall, 1845, pl. iii, figs. 7, 7 a.....         | 308     |
| <i>Natica (?) occidentalis</i> , n. s., Hall, 1845, pl. iii, figs. 8, 8 a.....    | 308-309 |
| <i>Turritella bilineata</i> , n. s., Hall, 1845, pl. iii, fig. 9.....             | 309     |
| <i>Cerithium nodulosum</i> , n. s., Hall, 1845, pl. iii, figs. 11, 12.....        | 309     |
| <i>Turbo paludinaeformis</i> , n. s., Hall, 1845, pl. iii, fig. 13.....           | 309     |
| Leaves of Dicotyledonous plants, pl. iii, figs. 14, 15.....                       | 309     |
| <i>Inoceramus</i> ——— f, Hall, 1845, pl. iv, figs. 1, 1 a.....                    | 309-310 |
| <i>Inoceramus</i> ——— f, Hall, 1845, pl. iv, fig. 2.....                          | 310     |

### 2.

LL, JAMES. Description of new or rare species of fossils, from the Palæozoic series. <Rep. on the Geology of the Lake Superior Land district, by J. W. Foster and J. D. Whitney. Part ii, chapter xiii, pp. 203-231, pls. xxiiiæ-xxxv. Washington, 1851.

#### POTSDAM AND CALCIFEROUS SANDSTONES.

|                                                                                | Page.   |
|--------------------------------------------------------------------------------|---------|
| <i>Lingula prima</i> , Conrad, pl. xxiii, figs. 1 a-g.....                     | 204     |
| <i>Lingula antiqua</i> , Hall, pl. xxiii, figs. 2 a-c.....                     | 204-205 |
| Trilobites of the Potsdam Sandstone.....                                       | 205     |
| <i>Dikell[?]cephalus</i> , D. D. Owen, pl. xxiii, figs. 3 a-e, and fig. 4..... | 205-206 |

ILLS FROM THE CHAZY, BIRD'S EYE, BLACK RIVER, AND TRENTON LIMESTONES AND HUDSON RIVER GROUP.

|                                                                                |         |
|--------------------------------------------------------------------------------|---------|
| <i>Phenopora multipora</i> , n. s., Hall, 1851, pl. xxiv, figs. 1 a, b.....    | 206-207 |
| <i>Clathropora flabellata</i> , n. s., Hall, 1851, pl. xxiv, figs. 2 a, b..... | 207     |
| <i>Obolites lycoperdon</i> , Say, pl. xv, figs. 1 a-d.....                     | 207-208 |
| <i>Behizocrinus nodosus</i> f, pl. xxv, figs. 2 a-c.....                       | 208     |

|                                                                                                       | Page.   |
|-------------------------------------------------------------------------------------------------------|---------|
| <i>Echinospaerites</i> ?, n. s., Hall, 1851, pl. xxv, figs. 3 a, b.....                               | 208-209 |
| <i>Orinoidea</i> , or <i>Cystidea</i> .....                                                           | 209     |
| —— 1, pl. xxv, figs. 4 a-c.....                                                                       | 209     |
| <i>Murchisonia major</i> , n. s., Hall, 1851, pl. xxvi, figs. 1 a-c.....                              | 208-210 |
| <i>Asaphus barrandi</i> , n. s., Hall, 1851, pl. xxvii, figs. 1 a-d, and pl. xxviii.....              | 210-211 |
| <i>Harpes escanabiae</i> , n. s., Hall, 1851, pl. xxvii, fig. 2 a.....                                | 211-212 |
| <i>Phacops callicephalus</i> , pl. xxvii, figs. 3 a, b.....                                           | 212     |
| <i>Catenipora gracilis</i> , n. s., Hall, 1851, pl. xxix, figs. 1 a, b.....                           | 212-213 |
| <i>Sarcinula</i> ? <i>obsoleta</i> , n. s., Hall, 1851, pl. xxix, fig. 2 a, b.....                    | 213     |
| <i>Modiolopsis pholadiformis</i> , n. s., Hall, 1851, pl. xxx, figs. 1 a-c, and pl. xxxi, fig. 1..... | 213-214 |
| <i>Modiolopsis modiolaria</i> , Hall, pl. xxxi, figs. 2 a-d.....                                      | 214-215 |
| <i>Ambonychia carinata</i> , Hall, pl. xxxi, fig. 3.....                                              | 215     |

## CLINTON GROUP.

|                                        |         |
|----------------------------------------|---------|
| Tracks and trails of vertebrates?..... | 215-216 |
| Tracks of Crustaceans?.....            | 216-220 |

## NIAGARA GROUP.

|                                                                      |         |
|----------------------------------------------------------------------|---------|
| <i>Huronian vertebralis</i> , Stokes, pl. xxxiv, fig. 1.....         | 221     |
| <i>Huronian annulata</i> , n. s., Hall, 1851, pl. xxxiv, fig. 4..... | 221-222 |
| <i>Diacosurus conoides</i> , pl. xxxiv, figs. 2 and 3.....           | 222-223 |

## UPPER HELDERBERG LIMESTONES.

|                                                            |         |
|------------------------------------------------------------|---------|
| <i>Dietyonema fenestrata</i> , pl. xxxv, figs. 1 a, b..... | 223-224 |
| <i>Proetus</i> —— 1, Hall, 1851, pl. xxxv, fig. 2.....     | 224     |
| <i>Phacops anchiops</i> , pl. xxxv, figs. 3 a, b.....      | 224-225 |

## LIST OF FOSSILS.

|                                                                                                              |     |
|--------------------------------------------------------------------------------------------------------------|-----|
| General remarks on the above list.....                                                                       | 229 |
| Table of the number of species of fossils found in the State of New York and the Lake Superior district..... | 230 |

## 3.

HALL, JAMES. Letter from Professor James Hall, of New York, containing observations on the Geology and Paleontology of the country traversed by the expedition, and notes upon some of the Fossils collected on the route. <Exploration and Survey of the Valley of the Great Salt Lake of Utah, including a reconnaissance of a new route through the Rocky Mountains, by Howard Stansbury. Appendix E, pp. 398-414, pls. i-iv. Philadelphia, 1852.

## CORALS.

|                                                                                     | Page.   |
|-------------------------------------------------------------------------------------|---------|
| <i>Oyathophyllidae</i> .                                                            |         |
| <i>Faviphyllum rugosum</i> , n. s., Hall, 1852, pl. i, figs. 1 a, b.....            | 407-408 |
| <i>Zaphrentis</i> ? <i>multilamella</i> , n. s., Hall, 1852, pl. i, fig. 2.....     | 408     |
| <i>Zaphrentis stansburii</i> , Hall, n. s., 1852, pl. i, figs. 3 a, b.....          | 407     |
| <i>Lithostro</i> [n]tion —— (sp. indet.), Hall, 1852, pl. i, fig. 4 a, b.....       | 406     |
| <i>Brachiopoda</i> .                                                                |         |
| <i>Terebratula subtilita</i> , n. s., Hall, 1852, pl. iv, figs. 1 a, b, 2 a, b..... | 409     |
| <i>Spirifer hemiplicata</i> , n. s., Hall, 1852, pl. iv, figs. 3 a, b.....          | 409     |
| <i>S. octoplicata</i> ? pl. iv, fig. 4 a, b.....                                    | 408-410 |
| <i>S. triplicata</i> , Hall, n. s., 1852, pl. iv, figs. 5 a-c.....                  | 410     |
| <i>Ononetes variolata</i> , (D'Orb. sp.) DeKoninck, pl. iii, figs. 1 a, b.....      | 410     |
| <i>Productus costatus</i> ? DeKoninck, pl. iii, fig. 2.....                         | 411     |
| <i>P. semireticulatus</i> , DeKoninck, pl. iii, figs. 3-5 a, b.....                 | 411     |
| <i>Productus</i> —— (sp. indet.), Hall, 1852, pl. iii, fig. 4.....                  | 411     |
| <i>Orthis unbraculum</i> ? pl. iii, fig. 6.....                                     | 412     |
| <i>Acephala</i> .                                                                   |         |
| <i>Avicula</i> ? <i>custa</i> , pl. ii, figs. 1 a, b.....                           | 412     |
| <i>Tellinomya protensa</i> , Hall, n. s., 1852, pl. ii, fig. 3.....                 | 412     |
| <i>Cypriocardia occidentalis</i> , n. s., Hall, 1852, pl. iv, fig. 2.....           | 412     |
| <i>Alorisma terminalis</i> , n. s., Hall, 1852, pl. ii, figs. 4 a, b.....           | 413     |
| <i>A. nucula arata</i> , n. s., Hall, 1852, pl. ii, figs. 5 a, b.....               | 413     |
| <i>Gasteropoda</i> .                                                                |         |
| <i>Pleurotomaria coronula</i> , n. s., Hall, 1852, pl. ii, figs. 6 a-d.....         | 412-414 |
| <i>Euomphalus subplanus</i> , n. s., Hall, 1852, pl. ii, figs. 7 a, b.....          | 414     |



4.

LL, JAMES. Descriptions and Notices of the Fossils collected upon the route. <Rep. Expls. and Survs. from the Mississippi River to the Pacific Ocean, vol. iii. No. 1, general report upon the geological collections, chapter ix, pp. 99-105, pls. i and ii. Washington, 1856.

CRETACEOUS SPECIES.

|                                                                                  | Page.   |
|----------------------------------------------------------------------------------|---------|
| <i>Gryphæa</i> , Lamarck .....                                                   | 99      |
| <i>G. pitcheri</i> , Morton, 1834, pl. i, figs. 1-6 .....                        | 99-100  |
| <i>G. pitcheri</i> , var. <i>navia</i> , Hall, 1856, (pl. i, figs. 7-10) * ..... | 100     |
| <i>Ostrea</i> , Linnæus .....                                                    | 100     |
| <i>O. congesta</i> , Conrad, 1843, pl. i, fig. 11 .....                          | 100-101 |

CARBONIFEROUS SPECIES.

|                                                                                       |         |
|---------------------------------------------------------------------------------------|---------|
| <i>Terebratulæ</i> [L.]hwyl. ....                                                     | 101     |
| <i>T. millepunctata</i> , n. s., Hall, 1856, pl. ii, figs. 1, 2 .....                 | 101     |
| <i>T. subtilita</i> , Hall, pl. ii, figs. 3-5 .....                                   | 101     |
| <i>Spirifer</i> , Sowerby .....                                                       | 101     |
| <i>S. lineatus</i> , pl. ii, figs. 6-8 .....                                          | 101-102 |
| <i>S. kentuckensis</i> , Shumard, 1855, pl. ii, figs. 10, 11 .....                    | 102     |
| <i>S. cameratus</i> , Morton, 1834, pl. ii, figs. 9, 12, 13 .....                     | 102-103 |
| <i>Productus</i> , Sowerby .....                                                      | 103     |
| <i>P. semireticulatus</i> , Martin, 1809, pl. ii, figs. 16, 17 .....                  | 103     |
| <i>P. rogersi</i> , Norwood & Pratt, 1854, pl. ii, figs. 14, 15 .....                 | 104     |
| Imperfect specimens, the specific characters of which are obscure or indeterminate. . | 104-105 |

5.

LL, JAMES. Geology and Palæontology of the Boundary. <U. S. and Mex. Boundary Survey. Report of William H. Emory, vol. i, part ii, pp. 101-140, and 144-146, pls. i and xx and xxi pars. Washington, 1857.

The fossils figured on pl. xx were apparently named by James Hall, but no descriptions accompany them.

*Columnaria thomii*, n. s., Hall, 1857, pl. xx, figs. 1 a-d.  
*Terebratulæ mexicana*, n. s., Hall, 1857, pl. xx, figs. 2 a-c.  
*Orthis arachnoides*, n. s., Hall, 1857, pl. xx, figs. 3 a, b.  
*Euomphalus michlerianus*, n. s., Hall, 1857, pl. xx, fig. 4.  
*Asaphus emoryi*, n. s., Hall, 1857, pl. xx, fig. 5.

The Echinoderms in this report are described by Professor Hall.

|                                                                            | Page.   |
|----------------------------------------------------------------------------|---------|
| <i>Pyrina Parryi</i> , n. s., Hall, 1857, pl. i, figs. 1 a-d .....         | 144-145 |
| <i>Toxaster texanus</i> , Rømer, pl. i, figs. 2 a-c .....                  | 145     |
| <i>Cyphosoma texanum</i> , Rømer, pl. i, figs. 3 a-c .....                 | 145     |
| <i>Holactypus planatus</i> , n. s., ? Hall, 1857, pl. i, figs. 4 a-f ..... | 145-146 |
| <i>Toxaster elegans</i> , Shumard, sp. pl. xxi, figs. 1 a-e .....          | 146     |

*Gryphæa Pitcheri*, (Mort.). Hall is figured on pl. xxi, figs. 3 a-e, but its locality is not mentioned and it is not described.

6.

LL, JAMES, and WHITFIELD, R. P. Palæontology. <Rep. Geol. Expl. 40th parallel by Clarence King, vol. iv, part ii, pp. 194-302, pls. i-vii. Washington, 1877.

FOSSILS OF THE POTSDAM GROUP.

|                                                                    | Page. |
|--------------------------------------------------------------------|-------|
| <i>Brachiopoda</i> .                                               |       |
| <i>Obolella</i> , Bill .....                                       | 205   |
| <i>O. discoida</i> , n. s., H. & W., 1877, pl. i, figs. 1, 2 ..... | 205   |
| <i>Lingulepis</i> , Hall .....                                     | 206   |
| <i>L. mæra</i> , n. s., H. & W., 1877, pl. i, figs. 5-7 .....      | 206   |

These figures are copied from Marcou's figures of *Gryphæa Pitcheri*, Mort., except fig. 10, which is ed from a figure of Marcou's *Gryphæa dilatata*, Sow., Bull. Geol. Soc. France, 2d ser. vol. xii, pl. xxi, Geology of North America, pl. iv.

|                                                                                                              | Page.   |
|--------------------------------------------------------------------------------------------------------------|---------|
| <i>L. ? minuta</i> , n. s., H. & W., 1877, pl. i, figs. 3, 4.....                                            | 206-207 |
| <i>Kutorgina</i> , Billings.....                                                                             | 207     |
| <i>K. minutissima</i> , n. s., H. & W., 1877, pl. i, figs. 11, 12.....                                       | 207-208 |
| <i>Leptæna</i> , Dalman.....                                                                                 | 208     |
| <i>L. melita</i> , n. s., H. & W., 1877, pl. i, figs. 13, 14.....                                            | 208-209 |
| <b>Crustacea.</b>                                                                                            |         |
| <i>Onocephalites</i> , Zenker, = <i>Onocoryphe</i> Corda.....                                                | 220     |
| Subgenus <i>Crepicephalus</i> , Owen ? = <i>Loganellus</i> , Devine.....                                     | 209     |
| <i>Crepicephalus</i> ( <i>Loganellus</i> ) <i>hagueti</i> , n. s., H. & W., 1877, pl. ii, figs. 14, 15.....  | 210-212 |
| <i>O.</i> ( <i>Loganellus</i> ) <i>nitidus</i> , n. s., H. & W., 1877, pl. figs. 8-10.....                   | 212-214 |
| <i>O.</i> ( <i>Loganellus</i> ) <i>granulosus</i> , n. s., H. & W., 1877, pl. ii, figs. 2, 3.....            | 214-215 |
| <i>O.</i> ( <i>Loganellus</i> ) <i>maculosus</i> , n. s., H. & W., 1877, pl. ii, figs. 24, 25, and 26 ?..... | 215-216 |
| <i>O.</i> ( <i>Loganellus</i> ) <i>uniusulcatus</i> , n. s., H. & W., 1877, pl. ii, figs. 22, 23.....        | 216-217 |
| <i>O.</i> ( <i>Loganellus</i> ) <i>simulator</i> , n. s., H. & W., 1877, pl. ii, figs. 16-18.....            | 218     |
| <i>O.</i> ( <i>Loganellus</i> ) <i>anytus</i> , n. s., H. & W., 1877, pl. ii, figs. 19-21.....               | 219-220 |
| <i>O.</i> ( <i>Bathyrurus</i> ?) <i>angulatus</i> , n. s., H. & W., 1877, pl. ii, fig. 28.....               | 220-221 |
| <i>Pterocephalus</i> , Roemer.....                                                                           | 221     |
| <i>Onocephalites</i> ( <i>Pterocephalus</i> ) <i>laticeps</i> , n. s., H. & W., 1877, pl. ii, figs. 4-7..... | 221-223 |
| <i>Ptychaspis</i> , Hall.....                                                                                | 223     |
| <i>P. pusillosa</i> , n. s., H. & W., 1877, pl. ii, fig. 27.....                                             | 223-224 |
| <i>Chariocephalus</i> , Hall.....                                                                            | 224     |
| <i>C. tumifrons</i> , n. s., H. & W., 1877, pl. ii, figs. 38, 39.....                                        | 224-225 |
| <i>Dikellocephalus</i> , Owen.....                                                                           | 225-226 |
| <i>D. bilobatus</i> , n. s., H. & W., 1877, pl. ii, fig. 36.....                                             | 226     |
| <i>D. multiseinctus</i> , n. s., H. & W., 1877, pl. ii, fig. 37.....                                         | 226-227 |
| <i>D. stabiifer</i> , n. s., H. & W., 1877, pl. ii, figs. 29, 30.....                                        | 227-228 |
| <i>Agnostus</i> , Brongniart.....                                                                            | 228     |
| <i>A. communis</i> , n. s., H. & W., 1877, pl. i, figs. 28, 29.....                                          | 228-229 |
| <i>A. neon</i> , n. s., H. & W., 1877, pl. i, figs. 26, 27.....                                              | 229-230 |
| <i>A. prolongus</i> , n. s., H. & W., 1877, pl. i, figs. 30, 31.....                                         | 230-231 |
| <i>A. tumidosus</i> , n. s., H. & W., 1877, pl. i, fig. 32.....                                              | 231     |
| <b>FOSSILS OF THE LOWER SILURIAN.</b>                                                                        |         |
| <b>Brachiopoda.</b>                                                                                          |         |
| <i>Lingulepis</i> , Hall.....                                                                                | 232     |
| <i>L. ella</i> , n. s., H. & W., 1877, pl. i, fig. 8.....                                                    | 232     |
| <i>Orthis</i> , Dalman.....                                                                                  | 232     |
| <i>O. pogonipensis</i> , n. s., H. & W., 1877, pl. i, figs. 9, 10.....                                       | 232-233 |
| <i>Strophomena</i> , Rafinesque.....                                                                         | 233     |
| <i>S. nemea</i> , n. s., H. & W., 1877, pl. i, fig. 15.....                                                  | 233-234 |
| <i>Parambonites</i> , Pander.....                                                                            | 234     |
| <i>P. obscurus</i> , n. s., H. & W., 1877, pl. i, fig. 16.....                                               | 234     |
| <b>Gasteropoda.</b>                                                                                          |         |
| <i>Raphistoma</i> , Hall.....                                                                                | 235     |
| <i>R. acuta</i> , n. s., H. & W., 1877, pl. i, figs. 20-22.....                                              | 235     |
| <i>Maclurea</i> , Lesueur.....                                                                               | 235     |
| <i>M. minima</i> , n. s., H. & W., 1877, pl. i, figs. 17-19.....                                             | 235-236 |
| <i>Fusiopira</i> , Hall.....                                                                                 | 236     |
| <i>F. compacta</i> , n. s., H. & W., 1877, pl. i, fig. 25.....                                               | 236-237 |
| <i>Cyrtolites</i> , Conrad.....                                                                              | 237     |
| <i>C. sinuatus</i> , n. s., H. & W., 1877, pl. i, figs. 23, 24.....                                          | 237     |
| <b>Crustacea.</b>                                                                                            |         |
| <i>Onocephalites</i> , Zenker.....                                                                           | 237     |
| <i>C. subcoronatus</i> , n. s., H. & W., 1877, pl. ii, fig. 1.....                                           | 237-238 |
| <i>Crepicephalus</i> , Owen ? = <i>Loganellus</i> , Devine.....                                              | 238     |
| <i>C. ?</i> ( <i>Loganellus</i> ) <i>quadrans</i> , n. s., H. & W., 1877, pl. ii, figs. 11-13.....           | 238-240 |
| <i>Dikellocephalus</i> , Owen.....                                                                           | 240     |
| <i>D. quadriceps</i> , n. s., H. & W., 1877, pl. i, figs. 37-40.....                                         | 240-241 |
| <i>D. vauchateensis</i> , n. s., H. & W., 1877, pl. i, fig. 35.....                                          | 241-242 |
| <i>D. ? gothicus</i> , n. s., H. & W., 1877, pl. i, fig. 36.....                                             | 242-243 |
| <i>Bathyrurus</i> , Billings.....                                                                            | 243     |
| <i>B. pogonipensis</i> , n. s., H. & W., 1877, pl. i, figs. 33, 34.....                                      | 243-244 |
| <i>Ogigia</i> , Brongniart.....                                                                              | 244     |
| <i>O. producta</i> , n. s., H. & W., 1877, pl. ii, figs. 31-34.....                                          | 244-245 |
| <i>O. parabola</i> , n. s., H. & W., 1877, pl. ii, fig. 35.....                                              | 245-246 |

|                                                                                        | Page.   |
|----------------------------------------------------------------------------------------|---------|
| FOSSILS OF THE DEVONIAN.                                                               |         |
| <i>Brachiopoda.</i>                                                                    |         |
| <i>Strophodonta</i> , Hall .....                                                       | 246     |
| <i>S. canace</i> , H. & W., pl. iii, figs. 1-3 .....                                   | 246-247 |
| <i>Rhynchonella</i> , Fischer .....                                                    | 247     |
| <i>R. emmonsii</i> , n. s., H. & W., 1877, pl. iii, figs. 4-8 .....                    | 247-248 |
| <i>Lamellibranchiata.</i>                                                              |         |
| <i>Paracyclas</i> , Hall .....                                                         | 248     |
| <i>P. peroccidens</i> , n. s., H. & W., 1877, pl. iii, figs. 14-17 .....               | 248     |
| <i>Nuculites</i> , Conrad .....                                                        | 248     |
| <i>N. triangulus</i> , n. s., H. & W., 1877, pl. iii, figs. 12, 13 .....               | 248-249 |
| <i>Lunulicardium</i> , Munster .....                                                   | 249     |
| <i>L. fragosum</i> , Meek, pl. ii, figs. 9, 11 .....                                   | 249-250 |
| <i>Gasteropoda.</i>                                                                    |         |
| <i>Bellerophon</i> , Montf. ....                                                       | 250     |
| <i>B. natus</i> , n. s., H. & W., 1877, pl. iii, figs. 18-20 .....                     | 250-251 |
| FOSSILS OF THE WAVERLY GROUP.                                                          |         |
| <i>Radiata.</i>                                                                        |         |
| <i>Michelina</i> , D'Kon. ....                                                         | 251     |
| <i>Michelina</i> ——sp. ? H. & W., 1877, pl. iv, fig. 19 .....                          | 251-252 |
| <i>Brachiopoda.</i>                                                                    |         |
| <i>Streptorhynchus</i> , King .....                                                    | 252     |
| <i>S. equivalvis</i> , Hall, pl. iv, figs. 1, 2 .....                                  | 252     |
| <i>S. inflatus</i> , White & Whitf., 1862, pl. iv, fig. 8 .....                        | 252-253 |
| <i>Strophomena</i> , Rafinesque .....                                                  | 253     |
| <i>S. rhomboidalis</i> , Wilckens, pl. iv, fig. 4 .....                                | 253     |
| <i>Chonetes</i> , Fischer .....                                                        | 253     |
| <i>C. loganensis</i> , n. s., H. & W., 1877, pl. iv, fig. 9 .....                      | 253-254 |
| <i>Spirifera</i> , Sow .....                                                           | 254     |
| <i>S. centronata</i> , Winchell, 1865, pl. iv, figs. 5, 6 .....                        | 254-255 |
| <i>S. alba-pinensis</i> , n. s., H. & W., 1877, pl. iv, figs. 7, 8 .....               | 255-256 |
| <i>Athyris</i> , McCoy .....                                                           | 256     |
| <i>A. claytoni</i> , n. s., H. & W., 1877, pl. iv, figs. 15-17 .....                   | 256-257 |
| <i>A. planosulcata</i> ? n. s., H. & W., 1877, pl. iv, figs. 10, 11 .....              | 257     |
| <i>Rhynchonella</i> , Fischer .....                                                    | 257     |
| <i>R. pustulosa</i> , White ? pl. iv, figs. 12-14 .....                                | 257-258 |
| <i>Terebratulula</i> (Lilhwyl.), Brug .....                                            | 258     |
| <i>T. utah</i> , n. s., H. & W., 1877, pl. iv, fig. 18 .....                           | 258     |
| <i>Gasteropoda.</i>                                                                    |         |
| <i>Euomphalus</i> , Sow .....                                                          | 259     |
| <i>E. (Straparollus) utahensis</i> , n. s., H. & W., 1877, pl. iv, figs. 20-23 .....   | 259-260 |
| <i>E. laxus</i> , White, MSS., pl. iv, figs. 24, 25 .....                              | 260-261 |
| <i>E. (Straparollus) ophirensis</i> , n. s., H. & W., 1877, pl. iv, figs. 26, 27 ..... | 261     |
| <i>Crustacea.</i>                                                                      |         |
| <i>Proetus</i> , Stein .....                                                           | 262     |
| <i>P. peroccidens</i> , n. s., H. & W., 1877, pl. iv, figs. 28-32 .....                | 262-264 |
| <i>P. loganensis</i> , n. s., H. & W., 1877, pl. iv, fig. 33 .....                     | 264     |
| FOSSILS OF THE LOWER CARBONIFEROUS.                                                    |         |
| <i>Brachiopoda.</i>                                                                    |         |
| <i>Orthis</i> , Dalman .....                                                           | 265     |
| <i>O. resupinata</i> ? Martin, sp., pl. v., figs. 1, 2 .....                           | 265     |
| <i>Productus</i> , Sowerby .....                                                       | 265     |
| <i>P. Flemingi</i> var. <i>burlingtonensis</i> , Hall, pl. v, figs. 9-12 .....         | 265-266 |
| <i>P. laevicostus</i> ? White ? 1860, pl. v, figs. 7, 8 .....                          | 266-267 |
| <i>P. semireticulatus</i> , Martin, pl. v, figs. 5, 6 .....                            | 267-268 |
| <i>P. elegans</i> , n. s., H. & W., 1877, pl. v, figs. 3, 4 .....                      | 268-269 |
| <i>Spirifera</i> , Sowerby .....                                                       | 269     |
| <i>S. striata</i> , pl. v, figs. 13-15 .....                                           | 269-270 |
| <i>S. setigera</i> , Hall, pl. v, figs. 17, 18 .....                                   | 270-271 |
| <i>Spirifera</i> ——sp. ? H. & W., 1877, pl. v, fig. 16 .....                           | 271     |
| <i>Athyris</i> , McCoy .....                                                           | 271     |
| <i>A. subquadrata</i> ? Hall, pl. v, figs. 19, 20 .....                                | 271-272 |
| FOSSILS OF THE COAL-MEASURES AND PERMO-CARBONIFEROUS.                                  |         |
| <i>Lamellibranchiata.</i>                                                              |         |
| <i>Aviculopecten</i> , McCoy .....                                                     | 273     |
| <i>A. weberensis</i> , n. s., H. & W., 1877, pl. vi, fig. 5 .....                      | 273     |

|                                                                                                     | Page    |
|-----------------------------------------------------------------------------------------------------|---------|
| <i>A. curto-cardinalis</i> , n. s., H. & W., 1877, pl. vi, fig. 4.....                              | 273-274 |
| <i>A. parculus</i> , n. s., H. & W., 1877, pl. vi, fig. 6.....                                      | 274-275 |
| <i>Myalina</i> , De Koninck.....                                                                    | 275     |
| <i>M. aviculoides</i> , M. & H., 1860, pl. vi, fig. 8.....                                          | 275-276 |
| <i>M. permiana</i> , Swallow, 1858, pl. vi, fig. 7.....                                             | 276     |
| <i>Sedgewickia</i> , McCoy.....                                                                     | 276     |
| <i>S. ? concava</i> , M. & H., 1858, pl. vi, fig. 3.....                                            | 276-277 |
| <i>Cardiomorpha</i> , De Koninck.....                                                               | 277     |
| <i>C. missouriensis</i> , Swallow, 1858, pl. vi, figs. 1, 2.....                                    | 277     |
| <i>Cephalopoda</i> .                                                                                |         |
| <i>Cyrtoceras</i> , Goldf.....                                                                      | 278     |
| <i>C. cessator</i> , n. s., H. & W., 1877, pl. vi, fig. 15.....                                     | 278     |
| <i>Goniatites</i> , De Haan.....                                                                    | 279     |
| <i>G. kingii</i> , n. s., H. & W., 1877, pl. vi, figs. 9-14.....                                    | 279-280 |
| FOSSILS OF THE TRIASSIC FORMATION.                                                                  |         |
| <i>Radiata</i> .                                                                                    |         |
| <i>Echinodermata</i> .                                                                              |         |
| <i>Pentacrinites</i> , Miller.....                                                                  | 280     |
| <i>P. asteriscus</i> ? M. & H., 1858, pl. vi, fig. 16.....                                          | 280-281 |
| <i>Brachiopoda</i> .                                                                                |         |
| <i>Spiriferina</i> , D'Orb.....                                                                     | 281     |
| <i>S. homfrayi</i> ? Gabb, pl. vi, fig. 18.....                                                     | 281     |
| <i>Spirifera</i> ( <i>Spiriferina</i> ?) <i>alia</i> , n. s., H. & W., 1877, pl. vi, fig. 17.....   | 281-282 |
| <i>Terebratula</i> , (Llhwyl.), Brug.....                                                           | 282     |
| <i>T. humboldtensis</i> , Gabb, pl. vi, figs. 22-24.....                                            | 282-283 |
| <i>Lamellibranchiata</i> .                                                                          |         |
| <i>Edmondia</i> , De Koninck.....                                                                   | 283     |
| <i>E. myrina</i> , n. s., H. & W., 1877, pl. vi, fig. 19.....                                       | 283     |
| FOSSILS OF THE JURASSIC PERIOD.                                                                     |         |
| <i>Brachiopoda</i> .                                                                                |         |
| <i>Rhynchonella</i> , Fischer.....                                                                  | 284     |
| <i>R. myrina</i> , n. s., H. & W., 1877, pl. vii, figs. 1-5.....                                    | 284     |
| <i>R. gnathophora</i> ? Meek, pl. vii, fig. 6.....                                                  | 284-285 |
| <i>Terebratula</i> , (Llhwyl.), Brug.....                                                           | 285     |
| <i>T. augusta</i> , n. s., H. & W., 1877, pl. vii, figs. 7-10.....                                  | 285     |
| <i>Lamellibranchiata</i> .                                                                          |         |
| <i>Ostrea</i> , Linn.....                                                                           | 285     |
| <i>Ostrea</i> ——— sp. ? H. & W., 1877, pl. vii, fig. 12.....                                        | 285-286 |
| <i>Oryphæa</i> , Lam.....                                                                           | 286     |
| <i>G. calceola</i> , var. <i>nebrascensis</i> , H. & W., 1877, M. & H., 1861, pl. vii, fig. 11..... | 286-287 |
| <i>Aviculopecten</i> , McCoy.....                                                                   | 288     |
| <i>A. (Eumicrotis) ? augustensis</i> , n. s., H. & W., 1877, pl. vii, figs. 14-16.....              | 288     |
| <i>Eumicrotis</i> , Meek.....                                                                       | 288     |
| <i>E. curta</i> , Hall, pl. vii, fig. 24.....                                                       | 289     |
| <i>Camptonectes</i> , Agassiz.....                                                                  | 289     |
| <i>C. bellistriatus</i> , Meek, pl. vii, fig. 13.....                                               | 289-290 |
| <i>C. extenuatus</i> , Meek, pl. vii, fig. 18.....                                                  | 290-291 |
| <i>C. pertenuistriatus</i> , n. s., H. & W., 1877, pl. vii, fig. 17.....                            | 291-292 |
| <i>Lima</i> , Brug.....                                                                             | 292     |
| <i>L. (Plagiostoma) occidentalis</i> , n. s., H. & W., 1877, pl. vii, fig. 23.....                  | 292-293 |
| <i>Trigonia</i> , Brug.....                                                                         | 293     |
| <i>T. quadrangularis</i> , n. s., H. & W., 1877, pl. vii, fig. 22.....                              | 293-294 |
| <i>Leptocardia</i> , (n. g.), H. & W., 1877.....                                                    | 294     |
| <i>L. typica</i> , n. s., H. & W., 1877, pl. vii, figs. 26-29.....                                  | 295-296 |
| <i>L. carditoidea</i> , n. s., H. & W., 1877, pl. vii, fig. 25.....                                 | 296-297 |
| <i>Astarte</i> , Sowerby.....                                                                       | 297     |
| <i>A. ? arenosa</i> , n. s., H. & W., 1877, pl. vi, figs. 20-21.....                                | 297-298 |
| <i>Gasteropoda</i> .                                                                                |         |
| <i>Natica</i> , Lam.....                                                                            | 298     |
| <i>N. ? lelia</i> , n. s., H. & W., 1877, vii, figs. 19-21.....                                     | 298-299 |
| Classified list of the fossils described in this report.....                                        | 301-303 |



## VI.—THE WRITINGS OF ANGELO HEILPRIN.

### 1.

HEILPRIN, ANGELO. On some new species of Eocene mollusca from the southern United States. <Proc. U. S. National Museum, vol. iii, pp. 149-152, pl. 1, 1880. Washington, 1881.

|                                                                        | Page.   |
|------------------------------------------------------------------------|---------|
| <i>Pleurotoma</i> , Lamarck.....                                       | 149     |
| <i>P. pagoda</i> , n. s., Heilprin, 1880, pl. —, fig. 1.....           | 149-150 |
| <i>P. venusta</i> , n. s., Heilprin, 1880, pl. —, fig. 2.....          | 150     |
| <i>P. platysoma</i> , n. s., Heilprin, 1880, pl. —, fig. 3.....        | 150     |
| <i>Euchelodon</i> , Gabb.....                                          | 150     |
| <i>E. creno-carinata</i> , n. s., Heilprin, 1880, pl. —, fig. 4.....   | 150     |
| <i>Scalaria</i> , Lamarck.....                                         | 150     |
| <i>S. unilineata</i> , n. s., Heilprin, 1880, pl. —, fig. 5.....       | 150-151 |
| <i>Fusus</i> , Lamarck.....                                            | 151     |
| Subgenus <i>Strepsidura</i> , Swainson.....                            | 151     |
| <i>F. (Strepsidura) marnochi</i> , n. s., Heilprin, pl. —, fig. 6..... | 151     |
| <i>Terebra</i> , Lamarck.....                                          | 151     |
| <i>T. plicifera</i> , n. s., Heilprin, pl. —, fig. 8.....              | 151     |
| <i>Crassatella</i> , Lamarck.....                                      | 151     |
| <i>C. declivis</i> , n. s., Heilprin, pl. —, fig. 9.....               | 151-152 |

### 2.

HEILPRIN, ANGELO. North American tertiary Ostreidæ. <4th Annual Rep. of the director of the U. S. Geological Survey. A review of the fossil ostreidæ of North America; and a comparison of the fossil with the living forms by C. A. White. Appendix I, pp. 309-316, pls. lxiv-lxxii. Washington, 1883.

|                              | Page. |
|------------------------------|-------|
| <i>Ostrea</i> , Linnæus..... | 309   |

#### EOCENE.

|                                                                                  |     |
|----------------------------------------------------------------------------------|-----|
| <i>Ostrea alabamensis</i> , Lea, pl. lxiv, figs. 2-4.....                        | 309 |
| <i>Ostrea carolinensis</i> , Conrad.....                                         | 309 |
| <i>Ostrea compressirostra</i> , Say, pl. lxv, figs. 1-2.....                     | 309 |
| <i>Ostrea cretacea</i> , Morton.....                                             | 310 |
| <i>Ostrea divaricata</i> , Lea, pl. lxiv, fig. 1.....                            | 310 |
| <i>Ostrea eversa</i> , Mellville, sp., pl. lxiv, figs. 5-8.....                  | 310 |
| <i>Ostrea falciformis</i> , Conrad.....                                          | 311 |
| <i>Ostrea mortoni</i> , Gabb.....                                                | 311 |
| <i>Ostrea sellaformis</i> , Conrad, pl. lxii, figs. 1, 2; pl. lxiii, fig. 1..... | 311 |
| <i>Ostrea thirsa</i> , Gabb, pl. lxiii, figs. 4-6.....                           | 311 |
| <i>Ostrea trigonalis</i> , Conrad.....                                           | 311 |
| ? <i>Ostrea tuomeyi</i> , Conrad.....                                            | 311 |

#### OLIGOCENE.

|                                                                   |         |
|-------------------------------------------------------------------|---------|
| <i>Ostrea georgiana</i> , Conrad.....                             | 311-312 |
| <i>Ostrea vicksburgensis</i> , Conrad, pl. lxiii, figs. 2, 3..... | 312     |

#### MIOCENE.

|                                                             |     |
|-------------------------------------------------------------|-----|
| <i>Ostrea atwoodi</i> , Gabb, pl. lxviii, figs. 4, 5.....   | 312 |
| <i>Ostrea borealis</i> , Lamarck.....                       | 312 |
| <i>Ostrea contracta</i> , Conrad, pl. lxix, figs. 1, 2..... | 312 |

|                                                                          | Page    |
|--------------------------------------------------------------------------|---------|
| <i>Ostrea disparilis</i> , Conrad, pl. lxvi, figs. 1, 2.....             | 312     |
| <i>Ostrea panzana</i> , Conrad.....                                      | 313     |
| <i>Ostrea percrassa</i> , Conrad, pl. lxvii, fig. 8.....                 | 313     |
| <i>Ostrea sculpturata</i> , Conrad, pl. lxx, fig. 2.....                 | 313     |
| <i>Ostrea rubifalcata</i> , Conrad, pl. lxviii, figs. 1-3.....           | 313     |
| <i>Ostrea subjecta</i> , Conrad.....                                     | 313     |
| <i>Ostrea tayloriana</i> , Gabb, pl. lxvii, figs. 1, 2.....              | 313     |
| <i>Ostrea titan</i> , Conrad.....                                        | 313-314 |
| <i>Ostrea veleriana</i> , Conrad, pl. lxx, fig. 1.....                   | 314     |
| <i>Ostrea virginica</i> , Gmelin (= <i>O. virginiana</i> , Lamarck)..... | 314     |

## PLIOCENE.

|                                                             |     |
|-------------------------------------------------------------|-----|
| <i>Ostrea atwoodi</i> , Gabb.....                           | 314 |
| <i>Ostrea bourgeoisi</i> , Rémond, pl. lxxi, fig. 1.....    | 314 |
| <i>Ostrea heermanni</i> , Conrad.....                       | 314 |
| <i>Ostrea respertina</i> , Conrad, pl. lxxi, figs. 2-4..... | 315 |

## POST-PLIOCENE.

|                                                              |     |
|--------------------------------------------------------------|-----|
| <i>Ostrea conchaphila</i> , Carpenter.....                   | 315 |
| <i>Ostrea fundata</i> (Say ?), F. S. Holmes.....             | 315 |
| <i>Ostrea gallus</i> , Valenciennes.....                     | 315 |
| <i>Ostrea lurida</i> , Carpenter, pl. lxxii, figs. 2, 3..... | 316 |
| <i>Ostrea vetchii</i> , Gabb, pl. lxxii, fig. 1.....         | 316 |

## VII.—THE WRITINGS OF ALPHEUS HYATT.

### 1.

HYATT, ALPHEUS. [Descriptions of new genera and remarks on new species of Triassic fossils.] < Rep. Geol. Expl. 40th Parallel, by Clarence King. Vol. iv, part i, pp. 107-128 *pars*. Washington, 1877.

|                                                                                          | Page.   |
|------------------------------------------------------------------------------------------|---------|
| <i>Olydonitidae</i> , n. f., Hyatt, 1877 .....                                           | 107     |
| * <i>Coroceras</i> , n. g., Hyatt, 1877 .....                                            | 107-108 |
| <i>Olydonites</i> , Hauer .....                                                          | 109     |
| <i>C. laevadorsatus</i> , Hauer, sp., 1860, pl. x, fig. 7 .....                          | 109-110 |
| <i>Trachyceratidae</i> , n. f., Hyatt, 1877 .....                                        | 110     |
| † <i>Gymnotoceras</i> , n. g., Hyatt, 1877 .....                                         | 110-111 |
| <i>G. rotelliforme</i> , Meek, 1877, pl. x, figs. 9, 9 a .....                           | 112-113 |
| <i>G. blakei</i> , Gabb, sp., 1864, pl. x, figs. 10. a-c, and pl. xi, figs. 6, 6 a ..... | 115-116 |
| <i>Trachyceras</i> , Laube .....                                                         | 116     |
| <i>T. whitneyi</i> , Gabb, sp., 1864, pl. xi, figs. 3, 3 a .....                         | 117-118 |
| <i>T. judicarium</i> , Mojsisovics, 1869, pl. xi, figs. 1, 1 a .....                     | 118     |
| <i>Arcestidae</i> .....                                                                  |         |
| • <i>Arcestes</i> , Suecs, 1865 .....                                                    | 119-120 |
| <i>A. ? perplanus</i> , Meek, 1877, pl. xi, figs. 7, 7 a .....                           | 121     |
| <i>A. gabbi</i> , Meek, 1877, pl. x, figs. 6 a, b .....                                  | 123     |
| <i>Physanoidae</i> , Hyatt, 1877 .....                                                   | 124     |
| ‡ <i>Aerochordiceras</i> , n. g., Hyatt, 1877 .....                                      | 124     |
| <i>A. hyatti</i> , Meek, 1877, pl. xi, figs. 5, 5 a .....                                | 125-126 |
| § <i>Eulomoceras</i> , n. g., Hyatt, 1877 .....                                          | 126     |
| <i>Eudiscoceras</i> , n. g., Hyatt, 1877 .....                                           | 128     |

### 2.

HYATT, ALPHEUS. [Description of the new genus *Meekoceras*, and remarks on the different species of the same.] < Contributions to Invertebrate Paleontology No. 5, Triassic fossils of Southeastern Idaho, by C. A. White. Twelfth Ann. Rep. of the U. S. Geol. and Geogr. Surv. of the Terr., by F. V. Hayden. pp. 112-116, pls. xxxi-xxxii. Washington, 1883.

An author's edition of these contributions was published in 1880.

|                                                       | Page.   |
|-------------------------------------------------------|---------|
| <i>Meekoceras</i> , n. g., Hyatt, 1880 .....          | 112     |
| <i>M. aplanatum</i> , n. s., White, 1880 .....        | 113     |
| <i>M. muchbachianum</i> , n. s., White, 1880 .....    | 114     |
| <i>M. gracilitatis</i> , n. s., White, 1880 .....     | 115-116 |
| <i>Arcestes ? cirratus</i> , n. s., White, 1880 ..... | 117     |

### 3.

HYATT, ALPHEUS. [Description of the new genus *Enclimatoceras*.] < On the Nautiloid genus *Enclimatoceras* Hyatt, and a description of the type species. < On Mesozoic fossils, by C. A. White, Bull. U. S. Geol. Surv. No. 4. Vol. i, pp. 16-17 of No. 4, or pp. 104-105 of vol. i. Washington, 1884.

|                                                  |         |
|--------------------------------------------------|---------|
| <i>Enclimatoceras</i> , n. g., Hyatt, 1884 ..... | 104-105 |
|--------------------------------------------------|---------|

\* *κέρυς*, a helmet; *κέρας*, a horn.

† *γυμνός*, naked; *ῥῆτος*, back; *κέρας*, a horn.

‡ *αεριοχόρδων*, a wart; *κέρας*, a horn.

§ *εὐ* (augm. part.); *τομός*, sharp; *κέρας*, a horn.

|| *εὐ* (augm. part.); *δίσκος*, a quilt; *κέρας*, a horn.





## VIII.—THE WRITINGS OF JULES MARCOU.

### 1.

MARCOU, JULES. Sur la géologie des Montagnes Rocheuses, entre le Fort Smith (Arkansas) et Albuquerque (Nouveau Mexique). <Bull. Geol. Soc. France, 2d ser., vol. xi, pp. 155-160. Paris, 1854.

Mentions the existence, at Tucumcari, of the Jurassic formation with *Gryphæa dilatata* and *Ostrea Marshii*.

### 2.

MARCOU, JULES. Résumé of a geological reconnaissance extending from Napoleon, at the junction of the Arkansas with the Mississippi, to the Pueblo de los Angeles, in California. <U. S. Pacific R. R. Expl., 1853-54, vol. iii, 8vo. Report of explorations for a railway route near the 35th parallel of latitude, from the Mississippi River to the Pacific Ocean, by Lieut. A. W. Whipple, Corps of Topographical Engineers, chap. vi, pp. 40-48. H. Doc. 129. [Washington, 1855.]

Mentions the occurrence of a number of fossils and employs for the first time the name *Gryphæa tucumcari*.

### 3.

MARCOU, JULES. Résumé d'une section géologique des Montagnes Rocheuses à San Pedro, sur la côte de l'Océan Pacifique. <Bull. Geol. Soc. France, 2d ser., vol. xi, pp. 474-478. Paris, 1855.

Mentions the occurrence of a *Gryphæa* at Laguna (New Mexico), and of Carboniferous fossils near the San Francisco Mountains (Arizona).

### 4.

MARCOU, JULES. Geological notes of a survey of the country comprised between Preston, Red River, and El Paso, Rio Grande del Norte. <U. S. Pacific R. R. Expl., vol. iv, 8vo. Report of explorations of a route for the Pacific Railroad, near the 32d parallel of latitude from the Red River to the Rio Grande, by Brevet Capt. John Pope, Corps of Topographical Engineers. Chap. xiii, pp. 126-128. H. Doc. 126. [Washington, 1855.]

Mentions the occurrence of a number of fossils.

### 5.

MARCOU, JULES. Résumé explicatif d'une carte géologique des États-Unis et des provinces anglaises de l'Amérique du Nord, avec un profil géologique allant de la vallée du Mississippi aux côtes du Pacifique, et une planche de fossiles. <Bull. Geol. Soc. France, 2d ser., vol. xii, pp. 813-936, pls. xx-xxi. Paris, 1855.

The occurrence of many fossils is mentioned in this paper.

*Gryphæa dilatata*, Sowerby, pl. xxi, figs. 1 a, b, and 2.

*G. dilatata* var. *tucumcari*, Marcou, 1855, pl. xxi, fig. 3.

*Ostrea marshii*, Sowerby, pl. xxi, fig. 4.

*Gryphæa pitcheri*, Morton, pl. xxi, figs. 5 a, b, and 6.

## 6.

MARCOU, JULES. Notes géologiques sur le pays compris entre Preston, sur la rivière Rouge, et el Paso, sur le rio Grande del Norte. < Bull. Geol. Soc. France, 2d series, vol. xii, pp. 808-813. Paris, 1855.

In this paper the author mentions the occurrence of many fossils. The notes are made up from collections and observations brought back by Captain Pope, U. S. Top. Engrs., from his survey from the Red River to the Rio Grande, in 1854.

## 7.

MARCOU, JULES. Résumé and field-notes by Jules Marcou, geologist and mining engineer of the Expedition, with a translation by William P. Blake. < Rep. Expl. and Survs. from the Mississippi River to the Pacific Ocean, vol. iii, part. iv, pp. 121-164. Washington, 1856.

The occurrence of many fossils is mentioned in these field-notes, originally written in French.

## 8.

MARCOU, JULES. Résumé of a Geological reconnaissance extending from Napoleon, at the junction of the Arkansas with the Mississippi, to the Pueblo de los Angeles, in California. < Rep. Expl. and Survs. from the Mississippi River to the Pacific Ocean, vol. iii. Rep. of Lieut. A. W. Whipple, part iv, pp. 165-171. Washington, 1856.

This résumé is reprinted from the preliminary or first report of Lieutenant Whipple, in 8vo. chap. vi, p. 40, Reports of Pacific Railroad Surveys, House Doc. 129, Washington, 1855. A few notes are added.

|                                         | Page |
|-----------------------------------------|------|
| <i>Gryphaea Fitcheri</i> , Morton ..... | 167  |
| <i>G. dilatata</i> , Sowerby .....      | 168  |
| <i>O. Marshii</i> , Sowerby .....       | 168  |

## 9.

MARCOU, JULES. Geology of North America, with two reports on the Prairies of Arkansas and Texas, the Rocky mountains of New Mexico, and the Sierra Nevada of California, originally made for the United States Government, pp. 1-144, pls. i-ix. Zurich, 1858.

## CONTENTS.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Page  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| Introduction .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1-8   |
| Résumé of a geological reconnaissance extending from Napoleon, at the junction of the Arkansas with the Mississippi, to the pueblo de los Angeles in California. (Extract from Report of Exploration for a railway route, near the thirty-fifth parallel of latitude, from the Mississippi River to the Pacific Ocean, by Lieutenant, now Captain, A. W. Whipple. Corps of Topographical Engineers, chapter vi, page 40, &c. Washington, 1855. House of Representatives, Document No. 129) ..... | 9-25  |
| Geological notes of a survey of the country comprised between Preston, Red River, and El Paso, Rio Grande Del Norte. (Extract from Report of Exploration of a route for the Pacific Railroad, near the thirty-second parallel of latitude, from the Red River to the Rio Grande, by Brevet Capt. John Pope, Corps of Topographical Engineers, chapter xiii, Geological Report, p. 125, &c. Washington, 1855) .....                                                                               | 26-31 |
| Palaeontology .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 32-53 |
| Geology of New Mexico .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 54-57 |
| On the geology of the United States and the British Provinces of North America. (Extract from Dr. A. Petermann's Geographischen Mittheilungen, Heft 6, in 4 <sup>o</sup> . Gotha, 1855) .....                                                                                                                                                                                                                                                                                                    | 58-70 |
| Sketch of a geological classification of the mountains of a part of North America. (Extract from the Annales des Mines, 5 <sup>me</sup> série, tome vii, page 329, &c. Paris, 1855) .....                                                                                                                                                                                                                                                                                                        | 71-80 |
| On the Gold of California. (Extract from the Bibliothèque Universelle de Genève, février, 1855) .....                                                                                                                                                                                                                                                                                                                                                                                            | 81-84 |

|                                                                                                                                                                                                                               | Page.   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Construction of the Geological map of the United States and the British Provinces;<br>Criticism of the American Journal of Science and Arts, conducted by Professors<br>B. Silliman, B. Silliman, jr., and James D. Dana..... | 85-96   |
| A synopsis of the history of the progress and discoveries of Geology in North America.....                                                                                                                                    | 99-121  |
| List of maps and memoirs on the Geology of North America.....                                                                                                                                                                 | 123-143 |
| Note.....                                                                                                                                                                                                                     | 144     |

PALEONTOLOGY.

FOSSILS OF THE TERTIARY ROCKS.

|                                                                                          |       |
|------------------------------------------------------------------------------------------|-------|
| <i>Ostrea virginica</i> var. <i>californica</i> , Marcou, 1858, pl. v, figs. 2, 2 a..... | 32-33 |
|------------------------------------------------------------------------------------------|-------|

FOSSILS OF THE CRETACEOUS ROCKS.

|                                                                                    |       |
|------------------------------------------------------------------------------------|-------|
| <i>Ptychodus whipplei</i> , n. s., Marcou, 1858, pl. i, figs. 4, 4 a.....          | 33    |
| <i>Ammonites shumardi</i> , n. s., Marcou, 1858, pl. i, figs. 1, 1 a.....          | 33-34 |
| <i>Ammonites belknapii</i> , n. s., Marcou, 1858, pl. ii, figs. 1 a, 1 b.....      | 34    |
| <i>Ammonites peruvianus</i> , de Buch., pl. v, figs. 1, 1 a, 1 b.....              | 34-35 |
| <i>Ammonites gibbonianus</i> , Lea, pl. ii, figs. 2 a, 2 b.....                    | 35    |
| <i>Ammonites novi-mexicana</i> , n. s., Marcou, 1858, pl. i, figs. 2, 2 a.....     | 35-36 |
| <i>Hamites fremonti</i> , n. s., Marcou, 1858, pl. i, fig. 3.....                  | 36    |
| <i>Inoceramus lerouzi</i> , n. s., Marcou, 1858, pl. ii, fig. 3.....               | 36-37 |
| <i>Isocardia washita</i> , n. s., Marcou, 1858, pl. iii, figs. 2, 2 a, 2 b.....    | 37    |
| <i>Gryphaea sinuata</i> var. <i>americana</i> , Marcou, 1858, pl. iii, fig. 1..... | 37-38 |
| <i>Gryphaea pitcheri</i> , Morton, pl. iv, figs. 5, 5 a, b, and 6.....             | 38-40 |
| <i>Holaster comanchesi</i> , n. s., Marcou, 1858, pl. iii, figs. 3, 3 a.....       | 40-41 |
| <i>Exogyra flabellata</i> , Goldf.....                                             | 41-42 |
| <i>Cytherea missouriana</i> , Mort.....                                            | 42    |
| <i>Tellina occidentalis</i> , Mort.....                                            | 42    |
| <i>Caprotina tezana</i> , Reem.....                                                | 42    |

FOSSILS OF THE JURASSIC ROCKS.

|                                                                                                    |       |
|----------------------------------------------------------------------------------------------------|-------|
| <i>Gryphaea dilatata</i> var. <i>lucumearii</i> , Marcou, 1858, pl. iv, figs. 1, 1 a, 1, 2, 3..... | 43    |
| <i>Ostrea marshii</i> , Sow., pl. iv, fig. 4.....                                                  | 43-44 |

FOSSILS OF THE MOUNTAIN LIMESTONE OR LOWER CARBONIFEROUS ROCKS.

|                                                                                       |        |
|---------------------------------------------------------------------------------------|--------|
| <i>Orthoceras nova-mexicana</i> , n. s., Marcou, 1858, pl. vii, fig. 1.....           | 44     |
| <i>Myalina apachesi</i> , n. s., Marcou, 1858, pl. vii, figs. 6, 6 a.....             | 44-45  |
| <i>Productus delawarensis</i> , n. s., Marcou, 1858, pl. v, fig. 3.....               | 45     |
| <i>Productus cora</i> , d'Orb., pl. vi, figs. 4, 4 a.....                             | 45     |
| <i>Productus cora</i> var. <i>mogayoni</i> , Marcou, 1858, pl. vi, fig. 5.....        | 45-46  |
| <i>Productus semi-reticulatus</i> , Mart., pl. v, figs. 4, 4 a, pl. vi, fig. 6.....   | 46     |
| <i>Productus costatus</i> , Sow., pl. v, fig. 5.....                                  | 46-47  |
| <i>Productus flemingii</i> , Sow., pl. vi, fig. 7.....                                | 47     |
| <i>Productus scabriculus</i> , Mart., pl. v, figs. 6, 6 a.....                        | 47-48  |
| <i>Productus pyxidiformis</i> , de Kon., pl. vi, figs. 3, 3 a.....                    | 48     |
| <i>Productus pustulosus</i> , Phill., pl. vi, fig. 1.....                             | 48     |
| <i>Productus punctatus</i> , Mart., pl. vi, fig. 2.....                               | 48     |
| <i>Orthis pecosii</i> , n. s., Marcou, 1858, pl. vi, figs. 14, 14 a, b.....           | 48-49  |
| <i>Orthis crenistria</i> , Phill.....                                                 | 49     |
| <i>Spirifer striatus</i> , Mart., pl. vii, figs. 2, 2 a.....                          | 49     |
| <i>Spirifer striatus</i> var. <i>triplicatus</i> , Marcou, 1858, pl. vii, fig. 3..... | 49, 50 |
| <i>Spirifer rocky-montani</i> , n. s., Marcou, 1858, pl. vii, figs. 4, 4 a-c.....     | 50     |
| <i>Spirifer lineatus</i> , Mart., pl. vii, figs. 5, 5 a-c.....                        | 50     |
| <i>Terebratula rocky-montana</i> , n. s., Marcou, 1858, pl. vi, figs. 13, 13 a-c..... | 50-51  |
| <i>Terebratula mormonii</i> , n. s., Marcou, 1858, pl. vi, figs. 11, 11 a-c.....      | 51     |
| <i>Terebratula uta</i> , n. s., Marcou, 1858, pl. vi, figs. 12, 12 a-c.....           | 51     |
| <i>Terebratula roysii</i> , Léveillé, pl. vi, figs. 10, 10 a, b.....                  | 51-52  |
| <i>Terebratula plano-sulcata</i> , Phill., pl. vi, figs. 8, 8 a-b.....                | 52     |
| <i>Terebratula subtilita</i> , Hall, pl. vi, figs. 9, 9 a-f.....                      | 52     |
| <i>Zaphrentis stansburyi</i> , Hall, pl. vii, fig. 7.....                             | 52-53  |
| <i>Zaphrentis cylindrica</i> , Milne-Edwards & Jules Haime, pl. vii, fig. 8.....      | 53     |
| <i>Amplexus coralloides</i> ? Sow.....                                                | 53     |

## 10.

**MACOU, JULES.** Report on the Geology of a portion of Southern California. <Annual Report upon the Geographical Surveys West of the One Hundredth Meridian, in California, Nevada, Utah, Colorado, Wyoming, New Mexico, Arizona, and Montana, by George M. Wheeler, First Lieutenant of Engineers, U. S. A., being Appendix J J of the Annual Report of the Chief of Engineers for 1876. Appendix H, pp. 158-172. Washington, 1876.

|                                                            | Page.   |
|------------------------------------------------------------|---------|
| Pliocene rocks of Los Angeles.....                         | 158-159 |
| The Sierra of Santa Monica.....                            | 159-160 |
| Sierra Madre, Pacoña or Pacotina Cañon.....                | 160-161 |
| Geology of the vicinity of the San Fernando Mission.....   | 161     |
| The San Fernando sierra.....                               | 161-164 |
| Asphaltum and mineral oil near San Francisquito ranch..... | 164-166 |
| Sierra liebre and California desert.....                   | 166     |
| Cañada de las Uvas.....                                    | 166-167 |
| Tertiary rocks in the vicinity of Fort Tejon.....          | 167-169 |
| Tertiary rocks of California.....                          | 169     |
| Glacial rocks of Southern California and Pike's Peak.....  | 169-170 |
| Mountain chains and their ages.....                        | 170     |
| The Sierra Madre.....                                      | 170-171 |
| Coast Range.....                                           | 171-172 |
| Sierras of San Fernando and Santa Monica.....              | 172     |
| Hills of Los Angeles.....                                  | 172     |

The occurrence of many fossils is mentioned in this report.



## IX.—THE WRITINGS OF JOHN STRONG NEWBERRY.

### 1.

WBERRY, J. S. Palæontology. <Report upon the Colorado River of the West, by Lieut. Joseph C. Ives. Part iii, chapter xi, pp. 116-132, pls. i-iii. Washington, 1861.

|                                                                               | Page.   |
|-------------------------------------------------------------------------------|---------|
| <i>Archæocidaris</i> , McCoy                                                  | 116     |
| <i>A. longispinus</i> , n. s., Newberry, 1861, pl. i, figs. 1 and 1 a         | 116     |
| <i>A. ornatus</i> , n. s., Newberry, 1861, pl. i, figs. 2, 3, 3 a             | 116-117 |
| <i>A. gracilis</i> , n. s., Newberry, 1861, pl. i, figs. 4, 4 a               | 117     |
| <i>Ammonites</i> , Brug                                                       | 117     |
| <i>A. percarinatus</i> , H. & M., 1856                                        | 117-118 |
| <i>Nautilus</i> , Breynius                                                    | 118     |
| <i>Nautilus</i> , sp., Newberry, 1861                                         | 118     |
| <i>Bellerophon</i> , Montfort                                                 | 118     |
| <i>Inoceramus</i> , Sowerby                                                   | 119     |
| <i>I. problematicus</i> , D'Orb.                                              | 119     |
| <i>I. crispus</i> / Mantell                                                   | 119     |
| <i>Pinna</i> , Linn.                                                          | 119     |
| <i>P. lingula</i> , n. s., Newberry, 1861                                     | 119-120 |
| <i>Gryphæa</i> , Lamarck                                                      | 120     |
| <i>G. pilcheri</i> , Morton                                                   | 120     |
| <i>G. pilcheri</i> var. <i>navia</i> , Hall                                   | 120     |
| <i>Alorinna</i> , King                                                        | 120     |
| <i>A. capax</i> , n. s., Newberry, 1861, pl. i, figs. 9, 9 a                  | 120-121 |
| <i>Productus rogersi</i> , Norwood & Pratten                                  | 121     |
| <i>P. iveri</i> , n. s., Newberry, 1861, pl. ii, figs. 1-3                    | 122     |
| <i>P. occidentalis</i> , n. s., Newberry, 1861, pl. ii, figs. 9, 10           | 122     |
| <i>P. calhounianus</i> , Swallow                                              | 123     |
| <i>P. costatus</i> , Sowerby                                                  | 123     |
| <i>P. costatoides</i> , Swallow                                               | 123-124 |
| <i>P. semireticulatus</i> , Martin, De Koninck                                | 124     |
| <i>P. nodosus</i> , n. s., Newberry, 1861, pl. i, figs. 7, 7 b                | 124     |
| <i>P. splendens</i> / Norwood & Pratten, 1865                                 | 124-125 |
| <i>P. scabriculus</i> , Martin                                                | 125     |
| <i>Streptorhynchus</i> , King                                                 | 125     |
| <i>S. umbraculum</i> , Von Buch                                               | 125-126 |
| <i>S. pyramidalis</i> , n. s., Newberry, 1861, pl. ii, figs. 11-13            | 126     |
| <i>S. occidentalis</i> , n. s., Newberry, 1861, pl. i, figs. 5, 5 a           | 126     |
| <i>Athyris</i>                                                                | 126     |
| <i>A. subtilis</i> , Hall                                                     | 126-127 |
| <i>Spirifer</i> , Sowerby                                                     | 127     |
| <i>S. cameratus</i> , Mort.                                                   | 127     |
| <i>S. rockymontani</i> , Marcou                                               | 127     |
| <i>S. lineatus</i> , De Koninck                                               | 127-128 |
| <i>Chonetes</i> , Fisher                                                      | 128     |
| <i>O. verneuilliana</i> , Norwood & Pratten, pl. ii, fig. 6                   | 128     |
| <i>Rhynchonella</i> , Fisher                                                  | 128     |
| <i>R. uta</i> , Marcou                                                        | 128     |
| <i>Pecten</i> , Linn.                                                         | 128     |
| <i>P. occidentalis</i> , Shumard                                              | 128     |
| <i>P. (Monotis) coloradensis</i> , n. s., Newberry, 1861, pl. i, figs. 6, 6 a | 129     |
| <i>Fus[us]lina</i> , Fisher                                                   | 129     |
| <i>P. cylindrica</i> , Fisher                                                 | 129     |

|                                                                             | Page    |
|-----------------------------------------------------------------------------|---------|
| FOSSIL PLANTS.                                                              |         |
| <i>Cyclopteris</i> , Brong. ....                                            | 129     |
| <i>C. moqueensis</i> , n. s., Newberry, 1861, pl. iii, figa. 1, 2. ....     | 129-130 |
| <i>Pecopteris</i> , Brong. ....                                             | 130     |
| <i>P. cyclobola</i> , n. s., Newberry, 1861, pl. iii, figa. 3, 4, 4 a. .... | 130-131 |
| <i>Neuropteris</i> , Brong. ....                                            | 131     |
| <i>N. angulata</i> , n. s., Newberry, 1861, pl. iii, fig. 5. ....           | 131     |
| <i>Sphenopteris</i> , Brong. ....                                           | 131     |
| Subspecies, Newberry, 1861. ....                                            | 131     |
| <i>Phyllites</i> , Sterub. ....                                             | 131     |
| <i>P. venosissimus</i> , n. s., Newberry, 1861, pl. iii, fig. 6. ....       | 131     |
| <i>P. coriaceus</i> , n. s., Newberry, 1861, pl. iii, figa. 7, 7 a. ....    | 132     |
| <i>Clathropteris</i> , Brong. ....                                          | 132     |

## 2.

NEWBERRY, J. S. Descriptions of the Carboniferous and Triassic Fossils collected on the San Juan Exploring Expedition under Capt. J. N. Macomb, U. S. Engineers. <Rep. Expl. Exp. from Santa Fé, New Mexico, to the junction of the Grand and Green rivers of the Great Colorado of the West in 1859, under the command of Capt. J. N. Macomb, 135-148, pls. iii-viii. Washington, 1876.

|                                                                                                   | Page    |
|---------------------------------------------------------------------------------------------------|---------|
| <i>Deltodus merourei</i> , n. s., Newberry, 1876, pl. iii, figa. 1, 1 a. ....                     | 137     |
| <i>Ptychodus whipplei</i> , Marcou, pl. iii, figa. 2, 2 a-f. ....                                 | 137-138 |
| <i>Athyris subtilita</i> , Hall, sp. ....                                                         | 138     |
| <i>Spirifer cameratus</i> , Morton. ....                                                          | 138     |
| <i>Spirifer (Trigonotreta?) tezanus</i> , Meek, 1871, pl. iii, figa. 5, 5 a, b. ....              | 138-140 |
| <i>Productus nodosus</i> , Newberry, pl. iii, figa. 3, 3 d. ....                                  | 140     |
| <i>Pleurotomaria excelsa</i> , n. s., Newberry, 1876, pl. iii, figa. 4, 4 a. ....                 | 140-141 |
| <i>Lamna tezana</i> , Rømer. ....                                                                 | 141     |
| <i>Oxyrhina mantelli</i> , Agass. ....                                                            | 141     |
| <i>Otozamites macombi</i> , n. s., Newberry, 1876, pl. iv, figa. 1, 2, pl. vi, figa. 5, 5 a. .... | 141-142 |
| <i>Zamites occidentalis</i> , n. s., Newberry, 1876, pl. v, figa. 1, 1 a, and 2. ....             | 142-143 |
| <i>Pecopteris bullatus</i> , Bunbury, pl. vi, figa. 1, 1 a. ....                                  | 143     |
| <i>Pecopteris mexicana</i> , n. s., Newberry, 1876, pl. vi, figa. 2, 2 a. ....                    | 143-144 |
| <i>Pecopteris falcatus</i> , Emmons, pl. vi, fig. 3. ....                                         | 144     |
| <i>Pterophyllum fragile</i> , n. s., 1876, Newberry, pl. vi, figa. 6, 6 a. ....                   | 144     |
| <i>Pterophyllum robustum</i> , n. s., Newberry, 1876, pl. vi, fig. 7. ....                        | 145     |
| <i>Podozamites crassifolia</i> , n. s., Newberry, 1876, pl. vi, fig. 10. ....                     | 145     |
| <i>Alethopteris whitnei</i> , n. s., Newberry, 1876, pl. vii, figa. 1, 1 a, b. ....               | 145-146 |
| <i>Camplopteris remondi</i> , n. s., Newberry, 1876, pl. vii, figa. 2, 2 a. ....                  | 146-147 |
| <i>Taniopteris elegans</i> , n. s., Newberry, 1876, pl. viii, fig. 1. ....                        | 147     |
| <i>Taniopteris glasscopteroides</i> , n. s., Newberry, 1876, pl. viii, figa. 2, 2 a. ....         | 147     |
| <i>Taniopteris magnifolia</i> , Rogers, pl. viii, figa. 3, 4. ....                                | 147-148 |
| <i>Jeaneaukia radiata</i> , n. s., Newberry, 1876, pl. viii, fig. 6. ....                         | 148     |

## X.—THE WRITINGS OF DAVID DALE OWEN.

### 1.

OWEN, D. D. Description of some organic remains figured in this work, supposed to be new. <Rep. Geol. Expl. of part of Iowa, Wisconsin, and Illinois, by David Dale Owen. Appendix, pp. 69-86, pls. xi-xviii and p. 33, pl. vii. Washington, 1844.

|                                                       | Page. |
|-------------------------------------------------------|-------|
| <i>Ostenipora escharoides</i> , pl. vii, fig. 2 ..... | 33    |
| <i>Pentamerus oblongus</i> , pl. vii, fig. 3 .....    | 33    |
| <i>Pentamerus huspodus</i> , pl. vii, fig. 3 .....    | 33    |

### APPENDIX.

|                                                                                                    |    |
|----------------------------------------------------------------------------------------------------|----|
| <i>Cyathopora iowensis</i> , n. s., D. D. Owen, 1844, pl. xi .....                                 | 69 |
| <i>Orthoceras undulatum</i> , n. s., D. D. Owen, 1844, pl. xii, fig. 6 .....                       | 69 |
| <i>Gyroceras cornutes</i> , n. s., D. D. Owen, 1844, pl. xii, fig. 8 .....                         | 69 |
| <i>Delthyris euryteines</i> , n. s., D. D. Owen, 1844, pl. xii, fig. 9 .....                       | 69 |
| <i>Anthophyllum expansum</i> , n. s., D. D. Owen, 1844, pl. xiii, fig. 3 .....                     | 69 |
| <i>Lunulites ? dactioides</i> , n. s., D. D. Owen, 1844, pl. xiii, fig. 4 .....                    | 69 |
| <i>Cyathophyllum caliculare</i> , n. s., D. D. Owen, 1844, pl. xiii, fig. 5 .....                  | 69 |
| <i>Cyathophyllum corinthium</i> , n. s., D. D. Owen, 1844, pl. xiii, fig. 6 .....                  | 69 |
| <i>Cyathophyllum undulatum et multiplicatum</i> , n. s., D. D. Owen, 1844, pl. xiii, fig. 10 ..... | 69 |
| <i>Sarcinula (Porites ?) glabra</i> , n. s., D. D. Owen, 1844, pl. xiii, fig. 11 .....             | 70 |
| <i>Lamellopora</i> .....                                                                           | 70 |
| <i>L. infundibularia</i> , n. s., D. D. Owen, 1844, pl. xiv, fig. 1 .....                          | 70 |
| <i>Astrea namillaris</i> , n. s., D. D. Owen, 1844, pl. xiv, fig. 3 .....                          | 70 |
| <i>Astrea ? gigas</i> , n. s., D. D. Owen, 1844, pl. xiv, fig. 7 .....                             | 70 |
| <i>Lingula iowensis</i> , n. s., D. D. Owen, 1844, pl. xv, fig. 1 .....                            | 70 |
| <i>Orthoceras marginale</i> , n. s., D. D. Owen, 1844, pl. xvi, fig. 6 .....                       | 70 |
| <i>Gyroceras conicum</i> , n. s., D. D. Owen, 1844, pl. xvi, fig. 9 .....                          | 70 |
| <i>Strophomena conveza</i> , n. s., D. D. Owen, 1844, pl. xvii, fig. 2 .....                       | 70 |
| <i>Orbitulites ? reticulata</i> , n. s., D. D. Owen, 1884, pl. xviii, fig. 7 .....                 | 70 |
| <i>Atrypa limitaris</i> , ? Vanuxem, pl. xii, fig. 1 .....                                         | 74 |
| <i>Atrypa prisca</i> , Henggeven, pl. xii, fig. 2 .....                                            | 74 |
| <i>Calymene bufo</i> , Green, pl. xii, fig. 3 .....                                                | 74 |
| <i>Atrypa ?</i> ———, pl. xii, fig. 4 .....                                                         | 74 |
| <i>Delthyris ?</i> ———, pl. xii, fig. 5 .....                                                      | 74 |
| <i>Favosites polymorpha ramosa</i> , Goldfuss, pl. xii, fig. 7 .....                               | 74 |
| <i>Atrypa prisca</i> ———, pl. xii, fig. 10 .....                                                   | 74 |
| <i>Bellerophon</i> ———, pl. xii, fig. 11 .....                                                     | 74 |
| <i>Nucula ?</i> ———, pl. xii, fig. 12 .....                                                        | 74 |
| <i>Favosites polymorphus</i> , Goldfuss, pl. xii, fig. 13 .....                                    | 74 |
| <i>Cyathophyllum helianthoides</i> , Goldfuss, pl. xiii, fig. 1 .....                              | 76 |
| <i>Syringopora (lineata ?)</i> ———, pl. xiii, fig. 2 .....                                         | 76 |
| <i>Favosites maxima</i> , ? Troost, pl. xiii, fig. 7 .....                                         | 76 |
| <i>Porites ? astriformis</i> , Owen, pl. xiii, fig. 8 .....                                        | 76 |
| <i>Phragmoceras ventricosum</i> , ? ———, pl. xiii, fig. 9 .....                                    | 76 |
| <i>Aulopora serpens</i> , Goldfuss, pl. xiv, fig. 2 .....                                          | 78 |
| <i>Syphonia piriformis</i> , ? Goldfuss, pl. xiv, fig. 4 .....                                     | 78 |
| <i>Nucula minuta</i> , Owen, pl. xiv, fig. 5 .....                                                 | 78 |
| <i>Cyathophyllum turbinatum</i> , ? Goldfuss, pl. xiv, fig. 6 .....                                | 78 |
| <i>Cyathophyllum vesiculatum</i> , ? Goldfuss, pl. xiv, fig. 8 .....                               | 78 |
| <i>Orthis</i> , pl. xiv, fig. 9 .....                                                              | 78 |
| <i>Pentamerus oblongus</i> , ? pl. xiv, fig. 10 .....                                              | 78 |
| <i>Astrea fungiformis</i> , pl. xiv, fig. 11 .....                                                 | 78 |
| <i>Sarcinula costata</i> , Goldfuss, pl. xiv, fig. 12 .....                                        | 78 |
| <i>Tubipora lamellosa</i> , n. s., Owen, 1844, pl. xiv, fig. 13 .....                              | 78 |
| <i>Lingula iowensis</i> , pl. xv, fig. 1 .....                                                     | 80 |

|                                                                                         | Page. |
|-----------------------------------------------------------------------------------------|-------|
| <i>Bellerophon</i> (cast), pl. xv, fig. 2 .....                                         | 80    |
| <i>Orthis</i> (cast), pl. xv, fig. 3 .....                                              | 80    |
| <i>Pleurotomaria</i> † (cast), pl. xv, fig. 4 .....                                     | 80    |
| <i>Trochus lenticularis</i> ? (cast), pl. xv, fig. 5 .....                              | 80    |
| <i>Pleurotomaria</i> (cast), pl. xv, fig. 6 .....                                       | 80    |
| <i>Delthyris</i> (cast), pl. xv, fig. 7 .....                                           | 80    |
| <i>Euomphalus</i> (cast), pl. xv, fig. 8 .....                                          | 80    |
| <i>Atrypa orbicularis</i> (cast), pl. xv, fig. 9 .....                                  | 80    |
| <i>Pleurotomaria</i> (cast), pl. xv, fig. 10 .....                                      | 80    |
| <i>Orthis testudinaria</i> † (cast), pl. xv, fig. 11 .....                              | 80    |
| <i>Bellerophon</i> (cast), pl. xv, fig. 12 .....                                        | 80    |
| <i>Illenus-Trentonensis</i> ? pl. xvi, fig. 1 .....                                     | 82    |
| Casts of <i>Strophomena</i> , pl. xvi, fig. 2 .....                                     | 82    |
| Casts of <i>Strophomena</i> , <i>Orthis</i> † and <i>Atrypa</i> , pl. xvi, fig. 4 ..... | 82    |
| <i>Cynthophyllum profundum</i> , Conn., pl. xvi, fig. 5 .....                           | 82    |
| <i>Pleurotomaria</i> † pl. xvi, fig. 7 .....                                            | 82    |
| Siliceous casts of <i>Strophomena deltoidea</i> , pl. xvi, fig. 8 .....                 | 82    |
| <i>Orthis</i> , pl. xvii, fig. 1 .....                                                  | 84    |
| <i>Pleurotomaria</i> ? pl. xvii, fig. 3 .....                                           | 84    |
| <i>Atrypa</i> , pl. xvii, fig. 4 .....                                                  | 84    |
| <i>Strophomena sericea</i> ? pl. xvii, fig. 5 .....                                     | 84    |
| <i>Strophomena deltoidea</i> , pl. xvii, fig. 6 .....                                   | 84    |
| <i>Paradorides</i> ? pl. xvii, fig. 7 .....                                             | 84    |
| <i>Cardium tennesse</i> , n. s., Owen, 1844, pl. xvii, fig. 8 .....                     | 84    |
| <i>Thaleops</i> ? pl. xvii, fig. 9 .....                                                | 84    |
| <i>Strophomena nazuta</i> ? pl. xvii, fig. 10 .....                                     | 84    |
| <i>Ceraurus</i> , pl. xvii, fig. 11 .....                                               | 84    |
| <i>Cypricardites</i> , pl. xvii, fig. 12 .....                                          | 84    |
| <i>Pleurotomaria</i> , pl. xvii, fig. 13 .....                                          | 84    |
| <i>Delthyris expansa</i> , pl. xvii, fig. 14 .....                                      | 84    |
| <i>Bellerophon orbiculus</i> , pl. xvii, fig. 15 .....                                  | 84    |
| <i>Strophomena</i> , pl. xviii, fig. 1 .....                                            | 86    |
| <i>Anophus</i> , pl. xviii, fig. 2 .....                                                | 86    |
| <i>Strophomena angulata</i> ? pl. xviii, fig. 3 .....                                   | 86    |
| <i>Pleurotomaria</i> ? pl. xviii, fig. 4 .....                                          | 86    |
| <i>Pleurotomaria angulata</i> ? pl. xviii, fig. 5 .....                                 | 86    |
| <i>Pleurotomaria lenticularis</i> , pl. xviii, fig. 6 .....                             | 86    |
| <i>Trochus</i> ? pl. xviii, fig. 7 .....                                                | 86    |
| <i>Orthoceras</i> , pl. xviii, fig. 9 .....                                             | 86    |
| <i>Pharyngoceras</i> ? pl. xviii, fig. 11 .....                                         | 86    |

## 2.

OWEN, D. D. On the Geology of the Western States of North America. <Quart. Journ. Geol. Soc., London. Vol. ii, pp. 433-447, pl. xix. London, 1846.

This article, of which an abstract was given in the Proc. Geol. Soc., London., vol. iv, p. 1, contains many paleontological notes.

|                                           | Page. |
|-------------------------------------------|-------|
| <i>Pentamerus pygmaeus</i> , Say .....    | 437   |
| <i>Archimedes</i> & <i>Leontost</i> ..... | 437   |
| <i>Strophomena</i> .....                  | 437   |
| <i>Leontost</i> .....                     | 442   |
| <i>Strophomena</i> .....                  | 442   |

## 3.

OWEN, D. D. [Lists of fossils found.] <Rep. of a Geol. Recon. of the Chippewa land district of Wisconsin. 30th Congress, 1st session, Senate, Executive Doc. No. 57. Appendix, pp. 131-133. Washington, 1846.

|                                                                                                      | Page. |
|------------------------------------------------------------------------------------------------------|-------|
| List of fossil genera found in the lower sandstones of Wisconsin, fig. 1, species undetermined ..... | 131   |
| List of fossil genera found in the lower magnesian limestone, fig. 2, species undetermined .....     | 131   |



## XI.—THE WRITINGS OF JAMES SCHIEL.

SCHIEL, JAMES. List and Description of Organic Remains collected during the Exploration of the Central Pacific Railroad line, 1853-'54. <Rep. Expls. and Survs. from the Mississippi River to the Pacific Ocean. Report of Expls. for a route for the Pacific Railroad of the line of the forty-first parallel of north latitude, by Lieut. E. G. Beckwith, 1854. Vol. ii, chap. x, pp. 108-109, pls. i-iv. Washington, 1855.

|                                                                     | Page. |
|---------------------------------------------------------------------|-------|
| <i>Fenestella</i> , pl. i, fig. 1 .....                             | 108   |
| <i>Brachiopoda.</i>                                                 |       |
| <i>Terebratulina subtilita</i> , Hall, pl. i, figs. 2 a, b .....    | 108   |
| <i>Productus splendens</i> , Norwood & Prather, pl. i, fig. 3 ..... | 108   |
| <i>Productus æquicostatus</i> , Shumard, pl. ii, figs. 4, 5 .....   | 108   |
| <i>Spirifer</i> , pl. i, fig. 5 .....                               | 108   |
| <i>Inoceramus</i> , pl. ii, fig. 6 .....                            | 108   |
| <i>Inoceramus confertim-annulatus</i> , Rømer, pl. ii, fig. 7 ..... | 108   |
| <i>Inoceramus pseudo-mytiloides</i> , pl. iii, fig. 8 .....         | 108   |
| <i>Gryphæa pitcheri</i> , Morton, pl. iii, fig. 9 .....             | 108   |
| <i>Cardium multistriatum</i> , Shumard, pl. i, fig. 10 .....        | 109   |
| <i>Phillipia</i> ——— 1, pl. i, figs. 11-14 .....                    | 109   |
| <i>Encrinites and bryozoa</i> , pl. i, fig. 12 .....                | 109   |
| <i>Ammonites</i> .....                                              | 109   |
| <i>Gryphæa pitcheri</i> .....                                       | 109   |

OWEN, D. D. Description of new and imperfectly known Genera and Species of Organic Remains, collected during the geological surveys of Wisconsin, Iowa and Minnesota. < Rep. Geol. Surv. of Wisconsin, Iowa, and Minnesota, and incidentally of a part of Nebraska Territory, by David Dale Owen. Appendix, Article I, pp. 573-587, pls. i-ii, ii-iii, iii-iiii, iv-v, vii-viii. Philadelphia, 1852.

|                                                                                                             | Page.   |
|-------------------------------------------------------------------------------------------------------------|---------|
| <i>Crustacea (Trilobites).</i>                                                                              |         |
| <i>Dike(l)locephalus</i> , n. g., D. D. Owen, 1852                                                          | 573-574 |
| <i>D. minnesotensis</i> , n. s., D. D. Owen, 1852, tab. i, figs. 1, 2, 10; tab. i A, figs. 3, 6             | 574     |
| <i>D. pepinensis</i> , n. s., D. D. Owen, 1852, tab. i, fig. 9 a, b, fig. 13 (f) and tab. i, A, fig. 17 (f) | 574     |
| <i>D. miniscensis</i> , n. s., D. D. Owen, 1852, tab. i, figs. 3, 12, and tab. i A, figs. 4, 5              | 574-575 |
| <i>D. iowensis</i> , n. s., D. D. Owen, 1852, tab. i, fig. 4, and tab. i A, fig. 13                         | 575     |
| <i>D. granuloseus</i> , n. s., D. D. Owen, 1852, tab. i, figs. 7 (and 5 f)                                  | 575     |
| <i>Lonchocephalus</i> , n. g., D. D. Owen, 1852, tab. i A, fig. 12                                          | 575     |
| <i>L. chipewoensis</i> , n. s., D. D. Owen, 1852, tab. i, figs. 6, 14; tab. i A, fig. 9                     | 576     |
| <i>L. lamulus</i> , n. s., D. D. Owen, 1852, tab. i A, figs. 8-12                                           | 576     |
| <i>Orepioccephalus</i> , n. g., D. D. Owen, 1852                                                            | 576-577 |
| <i>Menocephalus</i> , n. g., D. D. Owen, 1852, tab. i, fig. 11                                              | 577     |
| <i>Aenphus (Isotelus) iowensis</i> , D. D. Owen, 1852, tab. ii A, figs. 1-7                                 | 577     |
| <i>Orphalopoda</i>                                                                                          | 577     |
| <i>Ammonites nebrascensis</i> , n. s., D. D. Owen, 1852, tab. viii, fig. 3, and tab. viii A, fig. 2         | 577-578 |
| <i>Ammonites nebrascensis (?)</i> , D. D. Owen, 1852, tab. viii, fig. 2                                     | 578     |
| <i>Ammonites cheyennensis</i> , n. s., D. D. Owen, 1852, tab. vii, fig. 3                                   | 578-579 |
| <i>Ammonites opalus</i> , n. s., D. D. Owen, 1852, tab. viii, fig. 6                                        | 579     |
| <i>Ammonites moreauensis</i> , n. s., D. D. Owen, 1852, tab. viii, fig. 7                                   | 579     |
| <i>Ammonites lenticularis</i> , D. D. Owen, tab. viii, fig. 5                                               | 579     |
| <i>Scaphites</i> of Parkinson                                                                               | 579-580 |
| <i>S. (Ammonites?) compressus</i> , n. s., D. D. Owen, 1852, tab. vii, fig. 4                               | 580     |
| <i>S. (Ammonites?) nodosus</i> , n. s., D. D. Owen, 1852, tab. viii, fig. 4                                 | 581     |
| <i>Gyroceras burlingtonensis</i> , n. s., D. D. Owen, 1852, tab. v, fig. 10                                 | 581     |
| <i>Discites tuberculatus</i> , n. s., D. D. Owen, 1852, tab. v, fig. 14                                     | 581     |
| <i>Gasteropoda</i>                                                                                          | 581     |
| <i>Pleurotomaria muratii</i> , n. s., D. D. Owen, 1852, tab. ii, fig. 6                                     | 581     |
| <i>Straparolius (Euomphalus) minnesotensis</i> , n. s., D. D. Owen, 1852, tab. ii, figs. 12, 13             | 581     |
| <i>Conchifera</i>                                                                                           | 582     |
| <i>Inoceramus eugensis</i> , n. s., D. D. Owen, 1852, tab. vii, fig. 3                                      | 582     |
| <i>Inoceramus nebrascensis</i> , n. s., D. D. Owen, 1852, tab. viii, fig. 1                                 | 582     |
| <i>Cucullæus nebrascensis</i> , n. s., D. D. Owen, 1852, tab. vii, fig. 1, 1 a                              | 582     |
| <i>Brachiopoda</i>                                                                                          | 583     |
| <i>Lingula pinnaformis</i> , n. s., D. D. Owen, 1852, tab. i B, figs. 4, 6, 8                               | 583     |
| <i>Lingula ampla</i> , n. s., D. D. Owen, 1852, tab. i B, fig. 5                                            | 583     |
| <i>Orbiculus prima</i> , n. s., D. D. Owen, 1852, tab. i B, figs. 17, 18, and top figures on tab. iv        | 583     |
| <i>Atrypa comis</i> , n. s., D. D. Owen, 1852, tab. iii A, fig. 4                                           | 583     |
| <i>Chonetes granulifera</i> , n. s., D. D. Owen, 1852, tab. v, fig. 12                                      | 583     |
| <i>Chonetes (?) iowensis</i> , n. s., D. D. Owen, 1852, tab. iii A, fig. 7                                  | 584     |
| <i>Productus nebrascensis</i> , n. s., D. D. Owen, 1852, tab. v, fig. 3                                     | 584     |
| <i>Leptæna trilobata</i> , n. s., D. D. Owen, 1852, tab. ii, figs. 17, 18                                   | 584     |
| <i>Strophodonts</i> , Hall                                                                                  | 584     |
| <i>S. parra</i> , n. s., D. D. Owen, 1852, tab. iii A, fig. 9                                               | 584     |
| <i>S. (?) costata</i> , n. s., D. D. Owen, 1852, tab. iii A, fig. 5                                         | 585     |
| <i>S. iowensis</i> , n. s., D. D. Owen, 1852                                                                | 585     |
| <i>Orthia cuneata</i> , n. s., D. D. Owen, 1852, tab. iii A, fig. 10                                        | 585     |
| <i>Spirifer iowensis</i> , n. s., D. D. Owen, 1852, tab. iii, fig. 1                                        | 585     |
| <i>Spirifer pennatus</i> , n. s., D. D. Owen, 1852, tab. iii, figs. 3 and 8 (f)                             | 585     |
| <i>Spirifer ligus</i> , n. s., D. D. Owen, 1852, tab. iii, fig. 4                                           | 585     |
| <i>Spirifer eurytricus</i> , D. D. Owen, tab. iii, figs. 2, 2 a, and 6, 6 a                                 | 586     |
| <i>Spirifer cordatus</i> , D. D. Owen, 1852, tab. iii, fig. 5                                               | 586     |
| <i>Spirifer inequicostatus</i> , n. s., D. D. Owen, 1852, tab. v, fig. 6                                    | 586     |
| <i>Foraminifera</i>                                                                                         | 586     |
| <i>Solenoides</i> , n. g., D. D. Owen, 1852, fig. 3, a (and b f)                                            | 586     |
| <i>S. iowensis</i> , n. s., D. D. Owen, 1852, tab. ii B, fig. 13                                            | 587     |

## 8.

OWEN, D. D., and SHUMARD, B. F. Descriptions of one New Genus and twenty-two New Species of Crinoidea, from the subcarboniferous limestone of Iowa. < Rep. Geol. Surv. of Wisconsin, Iowa, and Minnesota, and incidentally of a part of Nebraska territory, by David Dale Owen. Appendix. Article II, pp. 587-598, pls. Va-Vb. Philadelphia, 1852.

|                                                                                     | Page.   |
|-------------------------------------------------------------------------------------|---------|
| <i>Platycrinus</i> , Miller .....                                                   | 587     |
| <i>P. planus</i> , Owen & Shumard, 1850, tab. v A, figs. 4 a-c .....                | 587     |
| <i>P. yandellii</i> , Owen & Shumard, 1850, tab. v A, figs. 6 a, b .....            | 587-588 |
| <i>P. discoides</i> , Owen & Shumard, 1850, tab. v A, figs. 1 a, b .....            | 588     |
| <i>P. corrugatus</i> , Owen & Shumard, 1850, tab. v A, figs. 2 a-c .....            | 589     |
| <i>P. burlingtonensis</i> , Owen & Shumard, 1850, tab. v A, fig. 5 .....            | 589     |
| <i>Dichocrinus</i> , Munster .....                                                  | 589-590 |
| <i>D. ovatus</i> , Owen & Shumard, 1850, tab. v A, figs. 9 a, b .....               | 590     |
| <i>D. striatus</i> , Owen & Shumard, 1850, tab. v A, figs. 10 a, b .....            | 590     |
| <i>Oyathocrinus</i> , Miller .....                                                  | 591     |
| <i>O. iowensis</i> , Owen & Shumard, 1850, tab. v A, figs. 11 a-c .....             | 591     |
| <i>O. cornutus</i> , Owen & Shumard, 1850, tab. v A, figs. 8 a, b .....             | 591     |
| <i>Pentremites</i> , Say .....                                                      | 591     |
| <i>P. norwoodii</i> , Owen & Shumard, 1850, tab. v A, figs. 13 a-c .....            | 591-592 |
| <i>P. melo</i> , Owen & Shumard, 1850, tab. v A, figs. 14 a-c .....                 | 592     |
| <i>P. lateralis</i> , Owen & Shumard, 1850, tab. v A, fig. 15 .....                 | 592-593 |
| <i>P. stelliformis</i> , Owen & Shumard, 1850, tab. v A, figs. 16 a, b .....        | 593     |
| <i>Actinocrinus unicornus</i> , Owen & Shumard, 1850, tab. v A, figs. 12 a, b ..... | 593-594 |
| <i>Megistocrinus</i> , n. g., Owen & Shumard, 1852 .....                            | 594     |
| <i>M. evansii</i> , n. s., Owen & Shumard, 1852, tab. v A, figs. 3 a, b .....       | 594     |
| <i>Platycrinus</i> , Miller .....                                                   | 594     |
| <i>P. americanus</i> , Owen & Shumard, 1852, tab. v B, figs. 1 a, b .....           | 594-595 |
| <i>Poteriocrinus</i> , Miller .....                                                 | 595     |
| <i>P. rhombiferus</i> , Owen & Shumard, 1852, tab. v B, figs. 2 a-c .....           | 595     |
| <i>P. tumidus</i> , Owen & Shumard, 1852, tab. v B, figs. 3 a, b .....              | 595-596 |
| <i>P. spinosus</i> , Owen & Shumard, 1852, tab. v B, fig. 4 .....                   | 596     |
| <i>P. occidentalis</i> , Owen & Shumard, 1852, tab. v B, figs. 5 a, b .....         | 596-597 |
| <i>Agassizocrinus</i> (Troost in MSS) .....                                         | 597     |
| <i>A. conicus</i> , Owen & Shumard, 1852, tab. v B, fig. 6 .....                    | 597     |
| <i>Synbathocrinus dentatus</i> , Owen & Shumard, 1852, tab. v B, figs. 7 a, b ..... | 597-598 |

## 9.

OWEN, D. D. Shumard, B. F. Summary of the distribution of Orders, Genera, and Species, in the Northwest. < Rep. Geol. Surv. of Wisconsin, Iowa, and Minnesota, and incidentally of a part of Nebraska Territory, by David Dale Owen. Appendix. Article III, pp. 598-600. Philadelphia, 1852.

Modified by additions and researches since the publication in the Proc. of the American Association, 1861.





## 6.

MARD, B. F. Notice of Fossils from the Permian Strata of Texas and New Mexico, obtained by the United States Expedition, under Capt. John Pope, for boring Artesian Wells along the 32d Paral., with Descriptions of New Species from these Strata and the Coal Measures of that region. <Trans. Saint Louis Acad. Sci., vol. i, pp. 387-403, 1859, pl. xi. Saint Louis, 1856-1860.

## PERMIAN FOSSILS.

|                                                                           | Page.   |
|---------------------------------------------------------------------------|---------|
| <i>Zoophyta.</i>                                                          |         |
| <i>Chaetetes mackrothii</i> , Geinitz .....                               | 387     |
| <i>Chaetetes</i> , sp. (?) Shumard, 1859 .....                            | 388     |
| <i>Campophyllum</i> (?) <i>texanum</i> , n. s., Shumard, 1859 .....       | 388     |
| <i>Polyecalia</i> ?, Shumard, 1859 .....                                  | 388     |
| <i>Crustacea.</i>                                                         |         |
| <i>Phillipsia perannulata</i> , Shumard, pl. xi, fig. 10 .....            | 388     |
| <i>Bairdia</i> , sp. (?), Shumard, 1859 .....                             | 388     |
| <i>Bryozoa.</i>                                                           |         |
| <i>Fenestella popeana</i> , Prout .....                                   | 388     |
| <i>Acanthocladia americana</i> , Swallow .....                            | 388     |
| <i>Foraminifera.</i>                                                      |         |
| <i>Fusulina elongata</i> , Shumard .....                                  | 388-389 |
| <i>Brachiopoda.</i>                                                       |         |
| <i>Productus</i> .....                                                    | 389     |
| <i>P. calhounianus</i> , Swallow .....                                    | 389     |
| <i>P. mexicanus</i> , Shumard .....                                       | 389     |
| <i>P. pileolus</i> , Shumard .....                                        | 389     |
| <i>P. semirecticulatus</i> var. <i>antiquatus</i> , Martin .....          | 389     |
| <i>P. popei</i> , Shumard, pl. xi, figs. 8a, b .....                      | 389     |
| <i>P. norwoodii</i> , Swallow .....                                       | 389-390 |
| <i>P. leplayi</i> (?), Verneuil .....                                     | 390     |
| <i>Strophalosia</i> .....                                                 | 390     |
| <i>S. (Aulosteges) guadalupensis</i> , Shumard, pl. xi, figs. 5a, b ..... | 390     |
| <i>Chonetes</i> .....                                                     | 390     |
| <i>C. permiana</i> , n. s., Shumard, 1859 .....                           | 390     |
| <i>C. flemingi</i> (?), Norwood & Pratten .....                           | 390     |
| <i>Spirifer</i> .....                                                     | 390     |
| <i>S. mexicanus</i> , Shumard, pl. xi, figs. 4a, b .....                  | 390-391 |
| <i>S. guadalupensis</i> , n. s., Shumard, 1859 .....                      | 391     |
| <i>S. sulciferus</i> , Shumard, pl. xi, figs. 3a-c .....                  | 391     |
| <i>S. cameratus</i> , Morton .....                                        | 391     |
| <i>Spiriferina</i> .....                                                  | 391     |
| <i>S. billingsii</i> , Shumard .....                                      | 391-392 |
| <i>Terebratula</i> .....                                                  | 392     |
| <i>T. elongata</i> , Schlotheim .....                                     | 392     |
| <i>T. perinflata</i> , n. s., Shumard, 1859 .....                         | 392     |
| <i>Rhynchonella</i> .....                                                 | 392     |
| <i>R. guadalupæ</i> , Shumard, pl. xi, figs. 6a-c .....                   | 392     |
| <i>R. indentata</i> , n. s., Shumard, 1859 .....                          | 393     |
| <i>R. texana</i> , n. s., Shumard, 1859 .....                             | 393     |
| <i>Rhynchonella</i> , sp. (?), Shumard, 1859 .....                        | 393-394 |
| <i>Camerophoria</i> , Swallow, pl. xi, figs. 1a-e .....                   | 394     |
| <i>C. bisulcata</i> , Shumard, pl. xi, figs. 2a-d .....                   | 394     |
| <i>C. swallowiana</i> , n. s., Shumard, 1859, pl. xi, fig. 1 a-e .....    | 394-395 |
| <i>C. schlotheimi</i> (?), Bach .....                                     | 395     |
| <i>Retzia</i> .....                                                       | 395     |
| <i>R. papillata</i> , Shumard, pl. xi, figs. 9 a-c .....                  | 395     |
| <i>R. meekiana</i> , Shumard, pl. xi, figs. 7 a, b .....                  | 395     |
| <i>Streptorhynchus</i> .....                                              | 395     |
| <i>S. (Orthisina) shumardianus</i> , Swallow .....                        | 395     |
| <i>Orthisina</i> .....                                                    | 395     |
| <i>Orthisina</i> sp. (?), Shumard, 1859 .....                             | 395     |
| <i>Orania</i> .....                                                       | 395     |
| <i>C. permiana</i> , n. s., Shumard, 1859 .....                           | 395-396 |



# XIII.—THE WRITINGS OF ROBERT P. WHITFIELD.

## 1.

WHITFIELD, R. P. Descriptions of New Fossils. <Rep. of a reconnaissance of the Black Hills of Dakota, by William Ludlow, pp. 103-104, pl. i. Washington, 1875.

|                                                                        | Page.   |
|------------------------------------------------------------------------|---------|
| <i>Obolus</i> .....                                                    | 103     |
| <i>O. peetenoides</i> , n. s., Whitfield, 1875, pl. —, figs. 1-3 ..... | 103     |
| <i>Lingulepis primæformis</i> ? pl. —, fig. 4 .....                    | 103     |
| <i>Terebratula</i> .....                                               | 103     |
| <i>T. helena</i> , n. s., Whitfield, 1875, pl. —, figs. 5-10 .....     | 103-104 |

## 2.

WHITFIELD, R. P. Descriptions of New Species of Fossils. <Rep. of a reconnaissance from Carroll, Montana Territory, on the Upper Missouri, to the Yellowstone National Park, and return, by William Ludlow. pp. 139-145, pls. i-ii. Washington, 1876.

|                                                                                      | Page.   |
|--------------------------------------------------------------------------------------|---------|
| <i>Orepiccephalus</i> , Owen .....                                                   | 141     |
| <i>C. (Loganellus) montanensis</i> , n. s., Whitfield, 1876, pl. i, figs. 1, 2 ..... | 141     |
| <i>Arionellus</i> , Barrande .....                                                   | 141     |
| <i>A. tripunctatus</i> , n. s., Whitfield, 1876, pl. i, figs. 3-5 .....              | 141-142 |
| <i>Gryphæa</i> , Lam .....                                                           | 142     |
| <i>G. planoconvexa</i> , n. s., Whitfield, 1876, pl. ii, figs. 9, 10 .....           | 142     |
| <i>Gervillia</i> , DeFrance .....                                                    | 142     |
| <i>G. sparsalirata</i> , n. s., Whitfield, 1876, pl. ii, fig. 8 .....                | 142     |
| <i>Myalina</i> , De Koninck .....                                                    | 143     |
| <i>M. ? (Gervillea) perplana</i> , n. s., Whitfield, 1876, pl. i, fig. 8 .....       | 143     |
| <i>Pinna</i> , Linn .....                                                            | 143     |
| <i>P. ludlowi</i> , n. s., Whitfield, 1876, pl. i, figs. 6, 7 .....                  | 143     |
| <i>Tapes</i> , Mühlf. .....                                                          | 143     |
| <i>T. montanensis</i> , n. s., Whitfield, 1876, pl. ii, figs. 1, 2 .....             | 143-144 |
| <i>Maestra</i> , Linn .....                                                          | 144     |
| <i>M. maia</i> , n. s., Whitfield, 1876, pl. ii, fig. 5 .....                        | 144     |
| <i>Sanguinolaria</i> , Lam .....                                                     | 144     |
| <i>S. oblata</i> , n. s., Whitfield, 1876, pl. ii, figs. 3, 4 .....                  | 144     |
| <i>Thracia</i> , Leach .....                                                         | 144     |
| <i>T. (Corimya) grinnelli</i> , n. s., Whitfield, 1876, pl. ii, figs. 6, 7 .....     | 144-145 |
| <i>Vanikoroopsis</i> , Meek .....                                                    | 145     |
| <i>V. toumeyana</i> , M. & H., sp., 1856, pl. ii, figs. 11-13 .....                  | 145     |

## 3.

WHITFIELD, R. P. Preliminary report on the Paleontology of the Black Hills, containing descriptions of new species of fossils from the Potsdam, Jurassic, and Cretaceous formations of the Black Hills of Dakota. <U. S. Geographical and Geological Survey of the Rocky Mountain region, J. W. Powell in charge. pp. 1-49. Washington, July, 1877.

### FOSSILS FROM THE PRIMORDIAL ROCKS.

| Plantæ.                                                       | Page. |
|---------------------------------------------------------------|-------|
| <i>Palæochorda</i> .....                                      | 7     |
| <i>P. prima</i> , n. s., Whitfield, 1877, pl. i, fig. 2 ..... | 7     |



|                                                                                     | Page  |
|-------------------------------------------------------------------------------------|-------|
| <i>Palaeophagus</i> , Hall.....                                                     | 7     |
| <i>P. occidentalis</i> , n. s., Whitfield, 1877, pl. i, fig. 8.....                 | 7-8   |
| <i>Mollusca</i> .....                                                               |       |
| <i>Brachyopoda</i> .....                                                            |       |
| <i>Lingulella cuneatus</i> , n. s., Whitfield, 1877, pl. ii, figs. 5, 6.....        | 8-9   |
| <i>Lingulella peratensis</i> , n. s., Whitfield, 1877, pl. ii, figs. 7-9.....       | 9     |
| <i>Articulata</i> .....                                                             |       |
| <i>Dalmanella</i> .....                                                             |       |
| <i>Calymenella</i> .....                                                            |       |
| <i>Cypricardius</i> , Owen, (! <i>Loganellus</i> , Devine.).....                    | 10    |
| <i>C. (Loganellus) centralis</i> , n. s., Whitfield, 1877, pl. ii, figs. 21-24..... | 10-11 |
| <i>C. (Loganellus) planus</i> , n. s., Whitfield, 1877, pl. ii, fig. 20.....        | 11    |

FOSSILS FROM THE JURASSIC ROCKS.

|                                                                                                  |       |
|--------------------------------------------------------------------------------------------------|-------|
| <i>Brachio-</i> .....                                                                            |       |
| <i>Substernata</i> .....                                                                         |       |
| <i>Asteroides</i> .....                                                                          |       |
| <i>Asterias</i> , Linnaeus.....                                                                  | 15    |
| <i>A. ? dubium</i> , n. s., Whitfield, 1877, pl. iii, fig. 3.....                                | 15    |
| <i>Pecten</i> .....                                                                              |       |
| <i>Pecten</i> , Brug.....                                                                        | 16    |
| <i>P. suberrius</i> , n. s., Whitfield, 1877, pl. iv, figs. 12-15.....                           | 16-17 |
| <i>Pseudomonotis (Eumicrotis) orbiculata</i> , n. s., Whitfield, 1877, pl. iii, figs. 17-19..... | 17    |
| <i>Mytilidae</i> .....                                                                           |       |
| <i>Mytilus</i> , Linn.....                                                                       | 18    |
| <i>M. whitei</i> , n. s., Whitfield, 1877, pl. v, figs. 9-12.....                                | 18    |
| <i>Trapezium</i> , Humph. (= <i>Cypricardia</i> , Lam.).....                                     | 18    |
| <i>T. dellyburchensis</i> , n. s., Whitfield, 1877, pl. v, figs. 1-4.....                        | 18-19 |
| <i>T. subequalis</i> , n. s., Whitfield, 1877, pl. v, figs. 5-8.....                             | 19-20 |
| <i>Pleuronota</i> , Agassiz (family uncertain).....                                              | 20    |
| <i>P. newtoni</i> , n. s., Whitfield, 1877, pl. v, figs. 19-20.....                              | 20-21 |
| <i>Tancredia corbuliformis</i> , n. s., Whitfield, 1877, pl. vi, figs. 5-8.....                  | 21-22 |
| <i>Tancredia bulbosa</i> , n. s., Whitfield, 1877, pl. vi, figs. 1-3.....                        | 22    |
| <i>Tancredia postica</i> , n. s., Whitfield, 1877, pl. vi, fig. 14.....                          | 22-23 |
| <i>Veneridae</i> .....                                                                           |       |
| <i>Dorinea</i> , Scopoli.....                                                                    | 23    |
| <i>D. jurassica</i> , n. s., Whitfield, 1877, pl. v, figs. 21-24.....                            | 23-24 |
| <i>Psammobidae</i> .....                                                                         |       |
| <i>Psammobia</i> , Lam.....                                                                      | 24    |
| <i>P. ? prematura</i> , n. s., Whitfield, 1877, pl. v, fig. 31.....                              | 24    |
| <i>Nassa</i> , Gray.....                                                                         | 24    |
| <i>N. longirostra</i> , n. s., Whitfield, 1877, pl. v, fig. 35.....                              | 24-25 |
| <i>Caudofoveata</i> .....                                                                        |       |
| <i>Succinea</i> , Bellevue.....                                                                  | 25    |
| <i>S. jurassica</i> , n. s., Whitfield, 1877, pl. v, figs. 25-30.....                            | 25-26 |

FOSSILS OF THE CRETACEOUS.

|                                                                                                    |       |
|----------------------------------------------------------------------------------------------------|-------|
| <i>Mollusca</i> .....                                                                              |       |
| <i>Gammatracheata</i> .....                                                                        |       |
| <i>Pterida</i> , Meek.....                                                                         |       |
| <i>Pteris</i> , Scop.....                                                                          | 29    |
| <i>P. (Pseudopteria) sublevis</i> , n. s., Whitfield, 1877, pl. vii, fig. 6.....                   | 29-31 |
| <i>Inoceramus perplexus</i> , n. s., Whitfield, 1877, pl. viii, fig. 3, and pl. x, figs. 4, 5..... | 31    |
| <i>Subcostatus</i> , n. g., Whitfield, 1877.....                                                   | 31-32 |
| <i>S. typica</i> , n. s., Whitfield, 1877, pl. ix, figs. 1-7.....                                  | 32-33 |
| <i>Neobornida</i> .....                                                                            |       |
| <i>Neobornia</i> .....                                                                             | 33    |
| <i>N. subquadrata</i> , n. s., Whitfield, 1877, pl. xi, figs. 3, 4.....                            | 33    |
| <i>Cassidulidae</i> .....                                                                          |       |
| <i>Cassidula</i> , Lam.....                                                                        | 34    |
| <i>C. subquadrata</i> , n. s., Whitfield, 1877, pl. xi, fig. 12.....                               | 34    |
| <i>Cyprididae</i> .....                                                                            |       |
| <i>Sphaerula</i> .....                                                                             | 34    |
| <i>S. transversa</i> , n. s., Whitfield, 1877, pl. x, figs. 14-16.....                             | 34-35 |



|                                                                                            | Page. |
|--------------------------------------------------------------------------------------------|-------|
| <i>Zellinidae.</i>                                                                         |       |
| <i>Leipistha</i> , Meek .....                                                              | 35    |
| Subgenus <i>Oymella</i> , Meek .....                                                       | 35    |
| <i>Leipistha (Oymella) meeki</i> , n. s., Whitfield, 1877, pl. xi, figs. 27, 28 .....      | 35-36 |
| <i>Anatinidae.</i>                                                                         |       |
| <i>Thracia</i> , Leach .....                                                               | 36    |
| <i>T. subgracilis</i> , n. s., Whitfield, 1877, pl. xi, figs. 29-30 .....                  | 36    |
| <i>Gasteropoda.</i>                                                                        |       |
| <i>Fusus cheyennensis</i> , n. s., Whitfield, 1877, pl. xii, fig. 9 .....                  | 37    |
| <i>Aporrhaia meeki</i> , n. s., Whitfield, 1877, pl. xii, fig. 5 .....                     | 37    |
| <i>Aporrhaia (Goniocheila) castorensis</i> , n. s., Whitfield, 1877, pl. xii, fig. 1 ..... | 38    |
| <i>Akera</i> , O. F. Muller .....                                                          | 38    |
| <i>A. glans-oryza</i> , n. s., Whitfield, 1877, pl. xii, fig. 25 .....                     | 38-39 |
| <i>Cephalopoda.</i>                                                                        |       |
| <i>Helicoceras</i> , D'Orb. ....                                                           | 39    |
| <i>H. stenosoni</i> , n. s., Whitfield, 1877, pl. xiv, figs. 4-7 .....                     | 39-40 |
| <i>Heteroceras</i> , D'Orb. ....                                                           | 40    |
| <i>H. newtoni</i> , n. s., Whitfield, 1877, pl. xv, figs. 1-4 .....                        | 40-41 |
| <i>Ancylloceras</i> , D'Orb. ....                                                          | 42    |
| <i>A. jenneyi</i> , n. s., Whitfield, 1877, pl. xvi, figs. 6-8 .....                       | 42-43 |
| <i>A. tricostratus</i> , n. s., Whitfield, 1877, pl. xv, figs. 7-8 .....                   | 43-44 |
| <i>Ptychoceras meekianum</i> , n. s., Whitfield, 1877, pl. xvi, figs. 1-2 .....            | 44-45 |
| <i>Ptychoceras crassum</i> , n. s., Whitfield, 1877, pl. xvi, figs. 3-5 .....              | 45-46 |
| List of fossils described in the report of the Paleontology of the Black Hills ....        | 46-49 |

4.

WHITFIELD, R. P. Paleontology of the Black Hills of Dakota. < Report on the Geology and Resources of the Black Hills of Dakota, by Henry Newton, E. M., and Walter P. Jenney, E. M. < U. S. Geographical and Geological Survey of the Rocky Mountain region, J. W. Powell in charge, pp. 325-468, pls. i-xvi. Washington, 1880.

|                                                                    | Page.                            |
|--------------------------------------------------------------------|----------------------------------|
| <i>Plantæ.</i>                                                     |                                  |
| <i>Palæochorda</i> .....                                           | 331                              |
| <i>P. prima</i> , Whitfield, 1877, pl. i, fig. 2 .....             | 331-332                          |
| <i>Palæophycus</i> , Hall .....                                    | 332                              |
| <i>P. occidentalis</i> , Whitfield, 1877, pl. i, fig. 3 .....      | 332                              |
| <i>Palæophycus</i> , sp.? Whitfield, 1880, pl. i, fig. 1 .....     | 333                              |
| <i>Incertæ sedes.</i>                                              |                                  |
| <i>Arenicolites</i> , sp.? Whitfield, 1880, pl. ii, fig. 25 .....  | 333-334                          |
| <i>Brachiopoda.</i>                                                |                                  |
| <i>Lingulidæ.</i>                                                  |                                  |
| <i>Lingulepis</i> , Hall .....                                     | 335                              |
| <i>L. pinnaformis</i> , Owen, pl. ii, figs. 1-4 .....              | 335                              |
| <i>L. cuneolus</i> , Whitfield, 1877, pl. ii, figs. 5-6 .....      | 336                              |
| <i>L. perattenuatus</i> , Whitfield, 1877, pl. ii, figs. 7-9 ..... | 337                              |
| <i>L. dakotensis</i> , M. & H., pl. ii, figs. 10-11 .....          | 337-338                          |
| <i>Obolidae.</i>                                                   |                                  |
| <i>Obolus</i> , Eichwald .....                                     |                                  |
| <i>O. pectenoides</i> , Whitfield, 1875, pl. ii, figs. 18-19 ..... | 338-339                          |
| <i>Obolella</i> , Billings .....                                   | 339                              |
| <i>O. polita</i> , Hall, 1860, pl. ii, figs. 12, 13 .....          | 339-340                          |
| <i>O. nana</i> , M. & H., 1861, pl. ii, figs. 14-17 .....          | 340-341                          |
| <i>Articulata.</i>                                                 |                                  |
| <i>Trilobita.</i>                                                  |                                  |
| <i>Calymenidae.</i>                                                |                                  |
| <i>Crepicephalus</i> , Owen (1 <i>Loganellus</i> , Devine) .....   | 341                              |
| <i>C. centralis</i> , Whitfield, 1877, pl. ii, figs. 21-24 .....   | 341-343                          |
| <i>C. planus</i> , Whitfield, 1877, pl. ii, fig. 20 .....          | 343-344                          |
|                                                                    | FOSSILS FROM THE JURASSIC ROCKS. |
| <i>Radiata.</i>                                                    |                                  |
| <i>Echinodermata.</i>                                              |                                  |
| <i>Asteroidæ.</i>                                                  |                                  |
| <i>Asterias</i> , Linn. ....                                       | 344                              |
| <i>A. dubium</i> , Whitfield, 1877, pl. iii, fig. 3 .....          | 344-345                          |

*Acephala.*

|                                                      |     |
|------------------------------------------------------|-----|
| <i>Myalina</i> .....                                 |     |
| <i>M. squamosa</i> , Sow .....                       |     |
| <i>M. recta</i> , Shumard .....                      |     |
| <i>Pleurophorus</i> .....                            |     |
| <i>P. occidentalis</i> , M. & H .....                |     |
| <i>Monotis</i> .....                                 |     |
| <i>M. speluncaria</i> , Schlotheim .....             | 304 |
| <i>Monotis</i> , sp. (!), Shumard, 1859 .....        |     |
| <i>Azinus</i> .....                                  |     |
| <i>A. securis</i> , n. s., Shumard, 1859 .....       |     |
| <i>Edmondia</i> .....                                |     |
| <i>E. suborbiculata</i> , Swallow .....              |     |
| <i>Cardiomorpha</i> .....                            |     |
| <i>Cardiomorpha</i> , sp. (!) Shumard, 1859 .....    |     |
| <i>Gasteropoda.</i> .....                            |     |
| <i>Turbo</i> .....                                   |     |
| <i>T. guadalupensis</i> , n. s., Shumard, 1859 ..... |     |
| <i>T. helicinus</i> (!), Schlotheim .....            |     |
| <i>Straparollus</i> .....                            |     |
| <i>Straparollus</i> , sp. (!), Shumard, 1859 .....   |     |
| <i>Belerophon</i> .....                              |     |
| <i>Bellerophon</i> , sp. (!), Shumard, 1859 .....    |     |
| <i>Pleurotomaria</i> .....                           |     |
| <i>P. halliana</i> , n. s., Shumard, 1859 .....      |     |
| <i>Ohemnitzia</i> .....                              |     |
| <i>O. swallowiana</i> , n. s., Shumard, 1859 .....   |     |
| <i>Cephalopoda.</i> .....                            |     |
| <i>Nautilus</i> , sp. (!), Shumard, 1859 .....       | 309 |
| <i>Orthoceras</i> , sp. (!), Shumard, 1859 .....     |     |

## CARBONIFEROUS FOSSILS.

*Gasteropoda.*

|                                                               |      |
|---------------------------------------------------------------|------|
| <i>Turbo texanus</i> , n. s., Shumard, 1859 .....             |      |
| <i>Straparollus cornudanus</i> , n. s., Shumard, 1859 .....   | 400- |
| <i>Pleurotomaria proutiana</i> , n. s., Shumard, 1859 .....   |      |
| <i>Pleurotomaria obtusispira</i> , n. s., Shumard, 1859 ..... |      |
| <i>Pleurotomaria perornata</i> , n. s., Shumard, 1859 .....   | 401- |
| <i>Macrocheilus texanus</i> , n. s., Shumard, 1859 .....      |      |

## 7.

SHUMARD, B. F., and OWEN, D. D. (See Owen, D. D., and Shumard, B. F.).

# XIII.—THE WRITINGS OF ROBERT P. WHITFIELD.

## 1.

WHITFIELD, R. P. Descriptions of New Fossils. <Rep. of a reconnaissance of the Black Hills of Dakota, by William Ludlow, pp. 103-104, pl. i. Washington, 1875.

|                                                                        | Page.   |
|------------------------------------------------------------------------|---------|
| <i>Obolus</i> .....                                                    | 103     |
| <i>O. pectenoides</i> , n. s., Whitfield, 1875, pl. —, figs. 1-3 ..... | 103     |
| <i>Lingulepis primaeformis</i> ? pl. —, fig. 4 .....                   | 103     |
| <i>Terebratula</i> .....                                               | 103     |
| <i>T. helena</i> , n. s., Whitfield, 1875, pl. —, figs. 5-10 .....     | 103-104 |

## 2.

WHITFIELD, R. P. Descriptions of New Species of Fossils. <Rep. of a reconnaissance from Carroll, Montana Territory, on the Upper Missouri, to the Yellowstone National Park, and return, by William Ludlow. pp. 139-145, pls. i-ii. Washington, 1876.

|                                                                                      | Page.   |
|--------------------------------------------------------------------------------------|---------|
| <i>Orepticephalus</i> , Owen .....                                                   | 141     |
| <i>O. (Loganellus) montanensis</i> , n. s., Whitfield, 1876, pl. i, figs. 1, 2 ..... | 141     |
| <i>Arionellus</i> , Barrande .....                                                   | 141     |
| <i>A. tripunctatus</i> , n. s., Whitfield, 1876, pl. i, figs. 3-5 .....              | 141-142 |
| <i>Gryphaea</i> , Lam .....                                                          | 142     |
| <i>G. planoconvexa</i> , n. s., Whitfield, 1876, pl. ii, figs. 9, 10 .....           | 142     |
| <i>Gerrillia</i> , DeFrance .....                                                    | 142     |
| <i>G. sparsalirata</i> , n. s., Whitfield, 1876, pl. ii, fig. 8 .....                | 142     |
| <i>Myalina</i> , De Koninck .....                                                    | 143     |
| <i>M. ? (Gerrillea) perplana</i> , n. s., Whitfield, 1876, pl. i, fig. 8 .....       | 143     |
| <i>Pinna</i> , Linn .....                                                            | 143     |
| <i>P. ludlowi</i> , n. s., Whitfield, 1876, pl. i, figs. 6, 7 .....                  | 143     |
| <i>Tapes</i> , Mühlf. .....                                                          | 143     |
| <i>T. montanensis</i> , n. s., Whitfield, 1876, pl. ii, figs. 1, 2 .....             | 143-144 |
| <i>Mactra</i> , Linn .....                                                           | 144     |
| <i>M. maia</i> , n. s., Whitfield, 1876, pl. ii, fig. 5 .....                        | 144     |
| <i>Sanguinolaria</i> , Lam .....                                                     | 144     |
| <i>S. oblata</i> , n. s., Whitfield, 1876, pl. ii, figs. 3, 4 .....                  | 144     |
| <i>Thracia</i> , Leach .....                                                         | 144     |
| <i>T. (Corimya) grinnelli</i> , n. s., Whitfield, 1876, pl. ii, figs. 6, 7 .....     | 144-145 |
| <i>Vanikoreopsis</i> , Meek .....                                                    | 145     |
| <i>V. toumeyana</i> , M. & H., sp., 1856, pl. ii, figs. 11-13 .....                  | 145     |

## 3.

WHITFIELD, R. P. Preliminary report on the Paleontology of the Black Hills, containing descriptions of new species of fossils from the Potsdam, Jurassic, and Cretaceous formations of the Black Hills of Dakota. < U. S. Geographical and Geological Survey of the Rocky Mountain region, J. W. Powell in charge. pp. 1-49. Washington, July, 1877.

### FOSSILS FROM THE PRIMORDIAL ROCKS.

|                                                               | Page. |
|---------------------------------------------------------------|-------|
| <i>Plantæ.</i>                                                |       |
| <i>Palæochorda</i> .....                                      | 7     |
| <i>P. prima</i> , n. s., Whitfield, 1877, pl. i, fig. 2 ..... | 7     |



|                                                                                                    | Page  |
|----------------------------------------------------------------------------------------------------|-------|
| <i>Palaeophycus</i> , Hall.....                                                                    | 7     |
| <i>P. occidentalis</i> , n. s., Whitfield, 1877, pl. i, fig. 3.....                                | 7-8   |
| <i>Molluscoida.</i>                                                                                |       |
| <i>Brachiopoda.</i>                                                                                |       |
| <i>Lingulepis cuneolus</i> , n. s., Whitfield, 1877, pl. ii, figs. 5-6.....                        | 8-9   |
| <i>Lingulepis perattenuatus</i> , n. s., Whitfield, 1877, pl. ii, figs. 7-9.....                   | 9     |
| <i>Articulata.</i>                                                                                 |       |
| <i>Trilobita.</i>                                                                                  |       |
| <i>Calymenidae.</i>                                                                                |       |
| <i>Crepicephalus</i> , Owen, (? <i>Loganellus</i> , Devine.).....                                  | 10    |
| <i>C. (Loganellus) centralis</i> , n. s., Whitfield, 1877, pl. ii, figs. 21-24.....                | 10-11 |
| <i>C. (Loganellus) planus</i> , n. s., Whitfield, 1877, pl. ii, fig. 20.....                       | 11    |
| FOSSILS FROM THE JURASSIC ROCKS.                                                                   |       |
| <i>Radiata.</i>                                                                                    |       |
| <i>Echinodermata.</i>                                                                              |       |
| <i>Asteroidae.</i>                                                                                 |       |
| <i>Asterias</i> , Linnæus.....                                                                     | 15    |
| <i>A. ? dubium</i> , n. s., Whitfield, 1877, pl. iii, fig. 3.....                                  | 15    |
| <i>Pectenidae.</i>                                                                                 |       |
| <i>Pecten</i> , Brug.....                                                                          | 16    |
| <i>P. newberryi</i> , n. s., Whitfield, 1877, pl. iv, figs. 12-15.....                             | 16-17 |
| <i>Pseudomonotis (Eumicrotis) orbiculata</i> , n. s., Whitfield, 1877, pl. iii, figs. 17-19.....   | 17    |
| <i>Mytilidae.</i>                                                                                  |       |
| <i>Mytilus</i> , Linn.....                                                                         | 18    |
| <i>M. whitei</i> , n. s., Whitfield, 1877, pl. v, figs. 9-12.....                                  | 18    |
| <i>Trapezium</i> , Humph. (= <i>Cypricardia</i> , Lam.).....                                       | 18    |
| <i>T. bellefourchensis</i> , n. s., Whitfield, 1877, pl. v, figs. 1-4.....                         | 18-19 |
| <i>T. subequalis</i> , n. s., Whitfield, 1877, pl. v, figs. 5-8.....                               | 19-20 |
| <i>Pleuromya</i> , Agassiz (family uncertain).....                                                 | 20    |
| <i>P. newtoni</i> , n. s., Whitfield, 1877, pl. v, figs. 19-20.....                                | 20-21 |
| <i>Tancredia corbuliformis</i> , n. s., Whitfield, 1877, pl. vi, figs. 5-8.....                    | 21-22 |
| <i>Tancredia bulbosa</i> , n. s., Whitfield, 1877, pl. vi, figs. 1-3.....                          | 22    |
| <i>Tancredia postica</i> , n. s., Whitfield, 1877, pl. vi, fig. 14.....                            | 22-23 |
| <i>Veneridae.</i>                                                                                  |       |
| <i>Dorinia</i> , Scopoli.....                                                                      | 23    |
| <i>D. jurassica</i> , n. s., Whitfield, 1877, pl. v, figs. 21-24.....                              | 23-24 |
| <i>Psammobiidae.</i>                                                                               |       |
| <i>Psammobia</i> , Lam.....                                                                        | 24    |
| <i>P. ? prematura</i> , n. s., Whitfield, 1877, pl. v, fig. 31.....                                | 24    |
| <i>Næra</i> , Gray.....                                                                            | 24    |
| <i>N. longirostra</i> , n. s., Whitfield, 1877, pl. v, fig. 35.....                                | 24-25 |
| <i>Gastrochaenidae.</i>                                                                            |       |
| <i>Saxicava</i> , Bellevue.....                                                                    | 25    |
| <i>S. jurassica</i> , n. s., Whitfield, 1877, pl. v, figs. 25-30.....                              | 25-26 |
| FOSSILS OF THE CRETACEOUS.                                                                         |       |
| <i>Mollusca.</i>                                                                                   |       |
| <i>Lamellibranchiata.</i>                                                                          |       |
| <i>Pteriidae</i> , Meek.                                                                           |       |
| <i>Pteria</i> , Scop.....                                                                          | 26    |
| <i>P. (Pseudopteria) sublevis</i> , n. s., Whitfield, 1877, pl. vii, fig. 6.....                   | 26-27 |
| <i>Inoceramus perplexus</i> , n. s., Whitfield, 1877, pl. viii, fig. 3, and pl. x, figs. 4, 5..... | 27    |
| <i>Endocostea</i> , n. g., Whitfield, 1877.....                                                    | 27-28 |
| <i>E. typica</i> , n. s., Whitfield, 1877, pl. ix, figs. 1-7.....                                  | 27-28 |
| <i>Nuculanidae.</i>                                                                                |       |
| <i>Nuculana</i> .....                                                                              | 28    |
| <i>N. subequilatera</i> , n. s., Whitfield, 1877, pl. xi, figs. 3, 4.....                          | 28    |
| <i>Crassatellidae.</i>                                                                             |       |
| <i>Crassatella</i> , Lam.....                                                                      | 24    |
| <i>C. subquadrata</i> , n. s., Whitfield, 1877, pl. xi, fig. 12.....                               | 24    |
| <i>Cyprinidae.</i>                                                                                 |       |
| <i>Sphaeriola</i> .....                                                                            | 24    |
| <i>S. transversa</i> , n. s., Whitfield, 1877, pl. x, figs. 14-16.....                             | 24-25 |



|                                                                                      | Page. |
|--------------------------------------------------------------------------------------|-------|
| <i>Zellinidae</i>                                                                    |       |
| <i>Leiopiatha</i> , Meek                                                             | 35    |
| Subgenus <i>Cymella</i> , Meek                                                       | 35    |
| <i>Leiopiatha (Cymella) meeki</i> , n. s., Whitfield, 1877, pl. xi, figs. 27, 28     | 35-36 |
| <i>Anatinidae</i>                                                                    |       |
| <i>Thracia</i> , Leach                                                               | 36    |
| <i>T. subgracilis</i> , n. s., Whitfield, 1877, pl. xi, figs. 29-30                  | 36    |
| <i>Gasteropoda</i>                                                                   |       |
| <i>Fusus cheyennensis</i> , n. s., Whitfield, 1877, pl. xii, fig. 9                  | 37    |
| <i>Aporrhais meeki</i> , n. s., Whitfield, 1877, pl. xii, fig. 5                     | 37    |
| <i>Aporrhais (Goniochella) castorensis</i> , n. s., Whitfield, 1877, pl. xii, fig. 1 | 38    |
| <i>Akera</i> , O. F. Müller                                                          | 38    |
| <i>A. glans-oryza</i> , n. s., Whitfield, 1877, pl. xii, fig. 25                     | 38-39 |
| <i>Cephalopoda</i>                                                                   |       |
| <i>Helicoceras</i> , D'Orb                                                           | 39    |
| <i>H. stevensoni</i> , n. s., Whitfield, 1877, pl. xiv, figs. 4-7                    | 39-40 |
| <i>Heteroceras</i> , D'Orb                                                           | 40    |
| <i>H. newtoni</i> , n. s., Whitfield, 1877, pl. xv, figs. 1-4                        | 40-41 |
| <i>Ancylloceras</i> , D'Orb                                                          | 42    |
| <i>A. jenneyi</i> , n. s., Whitfield, 1877, pl. xvi, figs. 6-8                       | 42-43 |
| <i>A. tricotatus</i> , n. s., Whitfield, 1877, pl. xv, figs. 7-8                     | 43-44 |
| <i>Ptychoceras meekianum</i> , n. s., Whitfield, 1877, pl. xvi, figs. 1-2            | 44-45 |
| <i>Ptychoceras crassum</i> , n. s., Whitfield, 1877, pl. xvi, figs. 3-5              | 45-46 |
| List of fossils described in the report of the Paleontology of the Black Hills       | 46-49 |

## 4.

ITFIELD, R. P. Paleontology of the Black Hills of Dakota. < Report on the Geology and Resources of the Black Hills of Dakota, by Henry Newton, E. M., and Walter P. Jenney, E. M. < U. S. Geographical and Geological Survey of the Rocky Mountain region, J. W. Powell in charge, pp. 325-468, pls. i-xvi. Washington. 1890.

## FOSSILS FROM THE PRIMORDIAL ROCKS.

| <i>Platan.</i>                                                       |  | Page.   |
|----------------------------------------------------------------------|--|---------|
| <i>Palæochorda</i> .....                                             |  | 331     |
| <i>P. prima</i> , Whitfield, 1877, pl. i, fig. 2 .....               |  | 331-332 |
| <i>Palæophycus</i> , Hall .....                                      |  | 332     |
| <i>P. occidentalis</i> , Whitfield, 1877, pl. i, fig. 3 .....        |  | 332     |
| <i>Palæophycus</i> , sp.? Whitfield, 1880, pl. i, fig. 1 .....       |  | 333     |
| <i>Incertasedes</i> .                                                |  |         |
| <i>Arenicolites</i> , sp.? Whitfield, 1880, pl. ii, fig. 25 .....    |  | 333-334 |
| <i>Brachiopoda</i> .                                                 |  |         |
| <i>Lingulidæ</i> .                                                   |  |         |
| <i>Lingulepis</i> , Hall .....                                       |  | 335     |
| <i>L. pinnaformis</i> , Owen, pl. ii, figs. 1-4 .....                |  | 335     |
| <i>L. cuneolus</i> , Whitfield, 1877, pl. ii, figs. 5-6 .....        |  | 336     |
| <i>L. perattenuatus</i> , Whitfield, 1877, pl. ii, figs. 7-9 .....   |  | 337     |
| <i>L. dakotensis</i> , M. & H., pl. ii, figs. 10-11 .....            |  | 337-338 |
| <i>Obolidæ</i> .                                                     |  |         |
| <i>Obolus</i> , Eichwald .....                                       |  |         |
| <i>O. ? pectenoides</i> , Whitfield, 1875, pl. ii, figs. 18-19 ..... |  | 338-339 |
| <i>Obolella</i> , Billings .....                                     |  | 339     |
| <i>O. polita</i> , Hall, 1860, pl. ii, figs. 12, 13 .....            |  | 339-340 |
| <i>O. nana</i> , M. & H., 1861, pl. ii, figs. 14-17 .....            |  | 340-341 |

*Articulata.*

*Trilobita*.

*Calymenidae.*

|                                                                  |         |
|------------------------------------------------------------------|---------|
| <i>Orepticephalus</i> , Owen († <i>Loganellus</i> , Devine)..... | 341     |
| <i>O. centralis</i> , Whitfield, 1877, pl. ii, figs. 21-24.....  | 341-343 |
| <i>O. planus</i> , Whitfield, 1877, pl. ii, fig. 20.....         | 343-344 |

## FOSSILS FROM THE JURASSIC ROCKS.

*Radiata.*

*Echinodermata.*

*Asteroides*.

|                                                           |         |
|-----------------------------------------------------------|---------|
| <i>Asterias</i> , Linn. ....                              | 344     |
| <i>A. dubium</i> , Whitfield, 1877, pl. iii, fig. 3. .... | 344-345 |

|                                                                                         | Page    |
|-----------------------------------------------------------------------------------------|---------|
| <i>Orinoidea.</i>                                                                       |         |
| <i>Pentacrinidae.</i>                                                                   |         |
| <i>Pentacrinites</i> , Miller .....                                                     | 345     |
| <i>P. asteriscus</i> , M. & H., 1858, pl. 3, figs. 1-2 .....                            | 345     |
| <i>Brachiopoda.</i>                                                                     |         |
| <i>Lingulidae.</i>                                                                      |         |
| <i>Lingula</i> , Brug. ....                                                             | 346     |
| <i>L. brevirostris</i> , M. & H., 1858, pl. iii, figs. 4-5 .....                        | 346-347 |
| <i>Rhynchonellidae.</i>                                                                 |         |
| <i>Rhynchonella</i> , Fischer .....                                                     | 347     |
| <i>R. myrina</i> , pl. iii, figs. 6-7 .....                                             | 347     |
| <i>Lamellibranchiata.</i>                                                               |         |
| <i>Ostreidae.</i>                                                                       |         |
| <i>Ostrea</i> , Linn .....                                                              | 348     |
| <i>O. strigilecula</i> , White, pl. iii, figs. 8-12 .....                               | 348-349 |
| <i>Gryphæa</i> , Lam. ....                                                              | 349     |
| <i>G. calceola</i> var. <i>nebrascensis</i> , M. & H., 1861, pl. iii, figs. 13-16 ..... | 349-350 |
| <i>Pectenidae.</i>                                                                      |         |
| <i>Pecten</i> , Brugulères .....                                                        | 350     |
| <i>P. newberryi</i> , Whitfield, 1877, pl. iv, figs. 12-15 .....                        | 350-351 |
| <i>Camptonectes</i> , Agassiz .....                                                     | 351     |
| <i>C. bellistriatus</i> , Meek, 1860, pl. iv, figs. 6-11 .....                          | 351-353 |
| <i>C. extenuatus</i> , M. & H., 1860, pl. iv, figs. 4, 5 .....                          | 353-354 |
| <i>Aviculidae.</i>                                                                      |         |
| <i>Pseudomonotis</i> , Bronn .....                                                      | 354     |
| <i>P. (Eumicrotis) curta</i> , Hall, 1852, pl. iii, figs. 20-25 .....                   | 354-356 |
| <i>P. (Eumicrotis) orbiculata</i> , Whitfield, 1877, pl. iii, figs. 17-19 .....         | 356-357 |
| <i>Avicula</i> , Lam. ....                                                              | 357     |
| Subgenus <i>Oxytoma</i> , Meek .....                                                    | 357     |
| <i>A. (Oxytoma) mucronata</i> , M. & H., pl. iv, figs. 1, 2 .....                       | 357-358 |
| <i>Gervillia</i> , DeFrance .....                                                       | 358     |
| <i>G. recta</i> , Meek, pl. iv, fig. 3 .....                                            | 358-359 |
| <i>Arceida.</i>                                                                         |         |
| <i>Grammatodon</i> , M. & H. ....                                                       | 359     |
| <i>G. inornatus</i> , M. & H., 1858, pl. v, figs. 16-18 .....                           | 359-360 |
| <i>Mytilidae.</i>                                                                       |         |
| <i>Mytilus</i> , Linn .....                                                             | 360     |
| <i>M. schlei</i> , Whitfield, 1877, pl. v, figs. 9-12 .....                             | 360-361 |
| <i>Volzella</i> , Scopoli .....                                                         | 361     |
| <i>V. (modiola) formosa</i> , M. & H., 1861, pl. v, fig. 15 .....                       | 361-362 |
| <i>V. pertenuis</i> , M. & H., 1858, pl. v, figs. 13, 14 .....                          | 362-363 |
| <i>Crassatellidae.</i>                                                                  |         |
| <i>Astarte</i> , Sowerby .....                                                          | 363     |
| <i>A. ? fragilis</i> , M. & H., 1860, pl. v, figs. 32, 33 .....                         | 363-364 |
| <i>Trapezium</i> , Humph. (= <i>Cypricardia</i> , Lam.) .....                           | 364     |
| <i>T. bellefourchensis</i> , Whitfield, 1877, pl. v, figs. 1-4 .....                    | 364-365 |
| <i>T. subequalis</i> , Whitfield, 1877, pl. v, figs. 5-8 .....                          | 365-366 |
| <i>Pleuromya</i> , Agassiz (family uncertain) .....                                     | 367     |
| <i>P. newtoni</i> , Whitfield, 1877, pl. v, figs. 19, 20 .....                          | 367-368 |
| <i>Tancrediidae.</i>                                                                    |         |
| <i>Tancredia</i> , Lycett (= <i>Hettangia</i> , Terquem) .....                          | 368     |
| <i>T. ? inornata</i> , M. & H., 1860, pl. vi, figs. 9-13 .....                          | 368-369 |
| <i>T. corbuliformis</i> , Whitfield, 1877, pl. vi, figs. 5-8 .....                      | 370     |
| <i>T. bulbosa</i> , Whitfield, 1877, pl. vi, figs. 1-3 .....                            | 370-371 |
| <i>T. postica</i> , Whitfield, 1877, pl. vi, fig. 14 .....                              | 371-372 |
| <i>T. warrenana</i> , M. & H., 1860, pl. vi, fig. 4 .....                               | 372     |
| <i>Veneridae.</i>                                                                       |         |
| <i>Dosinia</i> , Scopoli .....                                                          | 373     |
| <i>D. jurassica</i> , Whitfield, 1877, pl. v, figs. 21-24 .....                         | 373     |
| <i>Psammobiidae.</i>                                                                    |         |
| <i>Psammobia</i> , Lam. ....                                                            | 374     |
| <i>P. ? prematura</i> , Whitfield, 1877, pl. v, fig. 31 .....                           | 374     |
| <i>Anatinidae.</i>                                                                      |         |
| <i>Thracia</i> , Leach .....                                                            | 375     |
| <i>T. ? sublevia</i> , M. & H., 1860, pl. v, fig. 34 .....                              | 375     |



|                                                                                        | Page.    |
|----------------------------------------------------------------------------------------|----------|
| <i>Neera</i> , Gray.....                                                               | 376      |
| <i>N. longirostra</i> , Whitfield, 1877, pl. v, fig. 35.....                           | 376      |
| <i>Gastrochaenidae</i> .                                                               |          |
| <i>Saxicava</i> , Belle[v]ue.....                                                      | 376      |
| <i>S. jurassica</i> , Whitfield, 1877, pl. v, figs. 25-30.....                         | 376-377  |
| <i>Cephalopoda</i> .                                                                   |          |
| <i>Tetrabranchiata</i> .                                                               |          |
| <i>Ammonitidae</i> .                                                                   |          |
| <i>Ammonites</i> , Bruguière.....                                                      | 378      |
| <i>A. cordiformis</i> , M. & H., 1858, pl. vi, figs. 20-24.....                        | 378-380  |
| <i>A. cordiformis</i> var. <i>distans</i> , Whitfield, 1880, pl. vi, fig. 25.....      | 380-381  |
| <i>Dibranchiata</i> .                                                                  |          |
| <i>Belemnitidae</i> .                                                                  |          |
| <i>Belemnites</i> , Agricola.....                                                      | 381      |
| <i>B. densus</i> , M. & H., 1858, pl. vi, figs. 15-19.....                             | 381-382  |
| FOSSILS FROM THE CRETACEOUS ROCKS.                                                     |          |
| <i>Lamellibranchiata</i> .                                                             |          |
| <i>Monomyaria</i> .                                                                    |          |
| <i>Pectinidae</i> .                                                                    |          |
| <i>Syncyclonema</i> , Meek.....                                                        | 383      |
| <i>S. rigida</i> , H. & M., pl. vii, fig. 1.....                                       | 383-384  |
| <i>Heteromyaria</i> .                                                                  |          |
| <i>Arculidae</i> .                                                                     |          |
| <i>Pteria</i> , Scopoli.....                                                           | 384      |
| <i>P. linguiformis</i> , E. & S., sp., pl. vii, figs. 2, 3.....                        | 384-385  |
| <i>P. (Oxytoma) nebrascana</i> , E. & S., pl. vii, fig. 4.....                         | 385-386  |
| <i>P. (Pseudopteria) fibrosa</i> , M. & H., sp., 1856, pl. vii, fig. 5.....            | 386      |
| <i>P. (Pseudopteria) sublevis</i> , Whitfield, 1877, pl. vii, fig. 6.....              | 387      |
| <i>Inoceramus</i> , Sowerby.....                                                       | 389      |
| <i>I. problematicus</i> ? Schlot., pl. vii, fig. 11.....                               | 389-390  |
| <i>I. fragilis</i> , H. & M., pl. ix, fig. 10.....                                     | 390-391  |
| <i>I. altus</i> , Meek, 1871, pl. ix, fig. 11.....                                     | 391      |
| <i>I. perplexus</i> , Whitfield, 1877, pl. viii, fig. 3, and pl. x, figs. 4, 5.....    | 392      |
| <i>I. sublevis</i> , H. & M., pl. x, figs. 1-3.....                                    | 393      |
| <i>I. sagensis</i> , Owen, 1852, pl. vii, fig. 12, and pl. viii, fig. 2.....           | 393-395  |
| <i>I. simpsoni</i> , Meek, 1860, pl. viii, fig. 1.....                                 | 395-396  |
| <i>I. vanuxemi</i> , M. & H., 1860, pl. vii, figs. 8, 9, and pl. viii, figs. 4, 5..... | 396-398  |
| <i>I. vanuxemi</i> var. ? Whitfield, 1880, pl. vii, fig. 10.....                       | 398      |
| <i>I. barabini</i> , Morton, 1834, pl. vii, fig. 7, and pl. ix, fig. 8.....            | 398-400  |
| <i>I. tenuilineatus</i> , H. & M., pl. ix, figs. 12, 13.....                           | 400, 402 |
| <i>Endocoste</i> , Whitfield, 1877.....                                                | 402-403  |
| <i>E. typica</i> , Whitfield, 1877, pl. ix, figs. 1-7.....                             | 403-404  |
| <i>E. sulcata</i> , Roemer, sp., pl. x, fig. 6.....                                    | 404-405  |
| <i>Integropallia</i> .                                                                 |          |
| <i>Arcidae</i> .                                                                       |          |
| Subgenus <i>Idonearca</i> , Conrad.....                                                | 405      |
| <i>Idonearca shumardi</i> , M. & H., pl. xi, figs. 8-11.....                           | 405-406  |
| <i>Nucula</i> , Lam.....                                                               | 406      |
| <i>N. planimarginata</i> , M. & H., 1856, pl. xi, figs. 5, 6.....                      | 406-407  |
| <i>Nuculana</i> , Link.....                                                            | 407      |
| <i>N. bisulcata</i> , M. & H., 1861, pl. xi, fig. 7.....                               | 407-408  |
| <i>N. subequilata</i> , Whitfield, 1877, pl. xi, figs. 3, 4.....                       | 408      |
| <i>Foldia</i> , Möller.....                                                            | 409      |
| <i>F. evansi</i> , M. & H., 1866, pl. xi, figs. 1, 2.....                              | 409      |
| <i>Lucinidae</i> .                                                                     |          |
| <i>Lucina</i> , Bruguière.....                                                         | 409      |
| <i>L. occidentalis</i> , Morton, pl. xi, figs. 19-21.....                              | 409-410  |
| <i>L. ventricosa</i> , H. & M., pl. xi, figs. 14-16.....                               | 410-411  |
| <i>L. (Diplodonta?) subundata</i> , H. & M., pl. xi, figs. 17, 18.....                 | 411-412  |
| <i>Crassatellidae</i> .                                                                |          |
| <i>Crassatella</i> , Lam.....                                                          | 412      |
| <i>C. subquadrata</i> , Whitfield, 1877, pl. xi, fig. 12.....                          | 412-413  |
| <i>Astarte</i> , Sowerby.....                                                          | 413      |
| <i>A. ecansi</i> , H. & M., pl. xi, fig. 13.....                                       | 413      |

|                                                                              | Page.   |
|------------------------------------------------------------------------------|---------|
| <i>Ventelliidae.</i>                                                         |         |
| <i>Veniella</i> , Stoliczka .....                                            | 414     |
| <i>V. humilis</i> , M. & H., 1860, pl. x, figs. 7-13 .....                   | 414     |
| <i>Sphaeriola</i> .....                                                      | 415     |
| <i>S. transversa</i> , Whitfield, 1877, pl. x, figs. 14-16 .....             | 415     |
| <i>Sinuopallia.</i>                                                          |         |
| <i>Veneridae.</i>                                                            |         |
| <i>Dosinia</i> , Scopoli .....                                               | 416     |
| <i>D. missouriana</i> ? Morton, pl. xi, figs. 25, 26 .....                   | 416-417 |
| <i>Thetis</i> , Linn. ....                                                   | 417     |
| <i>T. circularis</i> , M. & H., 1856, pl. xi, figs. 21-24 .....              | 417     |
| Family ?                                                                     |         |
| <i>Leioptistha</i> , Meek .....                                              | 418     |
| Subgenus <i>Oymella</i> , Meek .....                                         | 418     |
| <i>L. (Oymella) meeki</i> , Whitfield, 1877, pl. xi, figs. 27, 28 .....      | 418-419 |
| <i>Anatiniidae.</i>                                                          |         |
| <i>Thracia</i> , Leach .....                                                 | 419     |
| <i>T. subgracilis</i> , Whitfield, 1877, pl. xi, figs. 29, 30 .....          | 419-420 |
| <i>Neæra</i> , Gray .....                                                    | 420     |
| <i>N. moreauensis</i> , M. & H., pl. xi, fig. 31 .....                       | 420     |
| <i>Gasteropoda.</i>                                                          |         |
| <i>Siphonostomata.</i>                                                       |         |
| <i>Fascioliariidae.</i>                                                      |         |
| <i>Fasciolaria</i> , Lam. ....                                               | 421     |
| <i>F. (Cryptorhytis) fusiformis</i> , H. & M., pl. xii, fig. 12 .....        | 421-422 |
| <i>F. (Cryptorhytis) contorta</i> , M. & H., pl. xii, fig. 10 .....          | 422-423 |
| <i>F. (Plectocheilus) culbertsoni</i> , M. & H., pl. xii, fig. 11 .....      | 423-424 |
| <i>Fusus</i> , Lam. ....                                                     | 424     |
| <i>F. shumardi</i> , H. & M., pl. xii, figs. 7, 8 .....                      | 424     |
| <i>F. cheyennensis</i> , Whitfield, 1877, pl. xii, fig. 9 .....              | 424-425 |
| <i>Aporrhaidæ.</i>                                                           |         |
| <i>Aporrhais</i> , Dillwyn .....                                             | 425     |
| <i>A. newberryi</i> , Meek, pl. xii, fig. 4 .....                            | 425-426 |
| <i>A. meeki</i> , Whitfield, 1877, pl. xii, fig. 5 .....                     | 426     |
| <i>A. (Goniocheila) castorensis</i> , Whitfield, 1877, pl. xii, fig. 1 ..... | 427     |
| <i>Anchura</i> , Conrad .....                                                | 428     |
| <i>A. ? sublevia</i> , M. & H., pl. xii, fig. 6 .....                        | 428     |
| <i>A. (Drepanocheilus) nebrascensis</i> , E. & S., pl. xii, figs. 2, 3 ..... | 429     |
| <i>Holostomata.</i>                                                          |         |
| <i>Naticidae.</i>                                                            |         |
| <i>Lunatia</i> , Gray .....                                                  | 430     |
| <i>L. concinna</i> , H. & M., pl. xii, fig. 13 .....                         | 430     |
| <i>Vanikora</i> , Quoy and Gaimard .....                                     | 430     |
| <i>V. ambigua</i> , M. & H., pl. xii, fig. 14 .....                          | 430-431 |
| <i>Amnuropsis</i> , Moreh. ....                                              | 431     |
| <i>A. paludinaformis</i> , H. & M., pl. xii, fig. 16 .....                   | 431-432 |
| <i>Trochidae.</i>                                                            |         |
| <i>Margarita</i> , Leach .....                                               | 432     |
| <i>M. nebrascensis</i> , M. & H., pl. xii, fig. 15 .....                     | 432     |
| <i>Pulmonifera ?</i>                                                         |         |
| <i>Siphonariidae ?</i>                                                       |         |
| <i>Anisomyon</i> , M. & H. ....                                              | 433     |
| <i>A. alveolus</i> , M. & H., pl. xii, fig. 20 .....                         | 433-434 |
| <i>A. subovatus</i> , M. & H., pl. xii, fig. 19 .....                        | 434-435 |
| <i>A. patelliformis</i> , M. & H., pl. xii, figs. 17, 18 .....               | 435     |
| <i>A. borealis</i> , Morton, 1842, pl. xii, figs. 21-23 .....                | 436     |
| <i>Teetibranchiata.</i>                                                      |         |
| <i>Bullidae.</i>                                                             |         |
| <i>Haminea</i> , Leach .....                                                 | 437     |
| <i>H. subcylindrica</i> , M. & H., pl. xii, fig. 24 .....                    | 437     |
| <i>Akera</i> , O. F. Muller .....                                            | 437     |
| <i>A. glans-oryza</i> , Whitfield, 1877, pl. xii, fig. 25 .....              | 437-438 |
| <i>Prosopoccephala.</i>                                                      |         |
| <i>Solenosomachæ.</i>                                                        |         |
| <i>Dentaliidae.</i>                                                          |         |
| <i>Dentalium</i> , Linn. ....                                                | 438     |
| <i>D. gracile</i> , H. & M., pl. xii, fig. 26 .....                          | 438-439 |



|                                                                                                      | Page.   |
|------------------------------------------------------------------------------------------------------|---------|
| <i>Cephalopoda.</i>                                                                                  |         |
| <i>Tetrabranchiata.</i>                                                                              |         |
| <i>Nautilidae.</i>                                                                                   |         |
| <i>Nautilus</i> , Breynius.                                                                          |         |
| <i>N. dekayi</i> var. <i>montanaensis</i> , Meek, pl. xvi, figs. 10, 11 .....                        | 439-440 |
| <i>Ammonitidae.</i>                                                                                  |         |
| <i>Prionocyclus</i> , Meek .....                                                                     | 440     |
| <i>P. wyomingensis</i> , Meek, 1870, pl. xiv, figs. 1-3 .....                                        | 440-441 |
| <i>Scaphitidae.</i>                                                                                  |         |
| <i>Scaphites</i> , Parkinson .....                                                                   | 441     |
| <i>S. nodosus</i> , Owen, 1852, pl. xiii, fig. 12 .....                                              | 441-443 |
| <i>S. nodosus</i> var. <i>brevis</i> , Meek, pl. xiii, figs. 8, 9 .....                              | 443     |
| <i>S. nodosus</i> var. <i>quadrangularis</i> , Meek, pl. xiii, figs. 10, 11 .....                    | 443-444 |
| <i>S. warreni</i> , M. & H., pl. xiii, figs. 1-4 .....                                               | 444-446 |
| <i>S. wyomingensis</i> , M. & H., pl. xiii, figs. 5-7 .....                                          | 446-447 |
| <i>Helicoceras</i> , D'Orb. ....                                                                     | 447     |
| <i>H. stevensoni</i> , Whitfield, 1877, pl. xiv, figs. 5-8 .....                                     | 447-449 |
| <i>Heteroceras</i> , D'Orb. ....                                                                     | 449     |
| <i>H. newtoni</i> , Whitfield, 1877, pl. xv, figs. 1-4 .....                                         | 449-451 |
| <i>H. ? nebrascense</i> , M. & H., pl. xv, fig. 6, and pl. xiv, fig. 9 .....                         | 451-452 |
| <i>Ancyloceras</i> , D'Orb. ....                                                                     | 452     |
| <i>A. jenneyi</i> , Whitfield, 1877, pl. xvi, figs. 7-9 .....                                        | 452-454 |
| <i>A. tricostatus</i> , Whitfield, 1877, pl. xv, figs. 7, 8 .....                                    | 454-455 |
| <i>Ptychoceras</i> , D'Orb. ....                                                                     | 455-457 |
| <i>P. meekianum</i> , Whitfield, 1877, pl. xvi, figs. 1, 2 .....                                     | 457-458 |
| <i>P. crassum</i> , Whitfield, 1877, pl. xvi, figs. 3-5 .....                                        | 459     |
| Synopsis of species from the Black Hills, noticed in other works, not described in this report ..... | 460-464 |
| List of fossils described in this report .....                                                       | 465-468 |

5.

WHITFIELD, R. P. Brachiopoda and Lamellibranchiata of the Raritan Clays and Green sand Marls of New Jersey. < Monographs of the United States Geological Survey, Vol. ix, pp. i-xx and 1-264, pls. i-xxxv. Washington, 1885.

CONTENTS.

|                                                                                 | Page. |
|---------------------------------------------------------------------------------|-------|
| Letter of transmittal from Prof. George H. Cook .....                           | ix    |
| Sketch of the Geology of Cretaceous and Tertiary formations of New Jersey ..... | ix    |
| Letter of transmittal from Prof. Robert P. Whitfield .....                      | xv    |
| Preliminary remarks .....                                                       | xvii  |
| <i>Brachiopoda</i> .....                                                        | 3     |
| Section I.— <i>Brachiopoda</i> of the Marl Beds .....                           | 5     |
| <i>Lamellibranchiata</i> .....                                                  | 17    |
| Section II.— <i>Lamellibranchiata</i> from the Raritan Clays .....              | 22    |
| Section III.— <i>Lamellibranchiata</i> from the Lower Marl Beds .....           | 29    |
| Section IV.— <i>Lamellibranchiata</i> from the Middle Marl Beds .....           | 194   |
| Section V.— <i>Lamellibranchiata</i> from the base of the Upper Marls .....     | 205   |
| Section VI.— <i>Lamellibranchiata</i> from the Eocene Marls .....               | 222   |
| Section VII.— <i>Unionidae</i> from the Camden Clays .....                      | 243   |
| Section VIII.—Classified list of the species .....                              | 253   |

BRACHIOPODA.

Section I.—*Brachiopoda* from the several Marl Beds of the State.

*Brachiopoda.*

*Terebratulidae.*

|                                                                   |       |
|-------------------------------------------------------------------|-------|
| <i>Terebratula</i> , Llhwyd .....                                 | 6     |
| <i>T. harlani</i> , Morton, pl. i, figs. 15-23 .....              | 6-9   |
| <i>Terebratulina atlantica</i> , Morton, pl. i, figs. 10-13 ..... | 9-11  |
| <i>Terebratulina floridana</i> , Morton .....                     | 11-12 |
| <i>Terebratulina lachryma</i> , Morton, pl. i, fig. 14. ....      | 12    |
| <i>Terebratella</i> , D'Orb. ....                                 | 12    |
| <i>T. plicata</i> , Say, 1829, pl. i, figs. 5-9 .....             | 12-14 |
| <i>T. vanuxemi</i> , Lyell & Forbes, 1845, pl. i, figs. 1-4 ..... | 14-15 |

## LAMELLIBRANCHIATA.

Page.

## Section II.—Lamellibranchiate Shells from the Plastic Clay.

*Astartidae.*

|                                              |       |
|----------------------------------------------|-------|
| <i>Astarte</i> , Sowerby.....                | 23    |
| <i>A. veta</i> , Conrad, pl. ii, fig. 1..... | 23-24 |

*Ogysseidae.*

|                                                                       |       |
|-----------------------------------------------------------------------|-------|
| <i>Ammonicardia</i> , n. g., Whitfield, 1885.....                     | 24-25 |
| <i>A. coxii</i> , n. s., Whitfield, 1885, pl. ii, figs. 11-14.....    | 25    |
| <i>Cardicula</i> , Megerle.....                                       | 26    |
| <i>C. emacrata</i> , n. s., Whitfield, 1885, pl. ii, figs. 5, 6.....  | 26    |
| <i>C. anosa</i> , Conrad, pl. ii, figs. 2-4.....                      | 26-27 |
| <i>Gnathodon</i> .....                                                | 27    |
| <i>G. tenuidens</i> , n. s., Whitfield, 1885, pl. ii, figs. 7-10..... | 27-28 |

## Section III.—Lamellibranchiata from the Lower Marl Beds.

*Triglopalata.**Asaphonida.**Monomyaria.**Ostreidae.*

|                                                                                                 |       |
|-------------------------------------------------------------------------------------------------|-------|
| <i>Ostrea</i> , Linn.....                                                                       | 29    |
| <i>O. denticulifera</i> , Conrad, pl. iii, figs. 8, 9.....                                      | 29    |
| <i>O. erenulimarginata</i> , Gabb, pl. iii, figs. 10, 11.....                                   | 30    |
| <i>O. panda</i> , Morton.....                                                                   | 30    |
| <i>O. plumosa</i> , Morton, pl. iii, figs. 12, 13.....                                          | 31-32 |
| <i>O. subpatulata</i> , L. & Sow., 1845, pl. iii, fig. 14.....                                  | 32-33 |
| <i>O. testicosta</i> , Gabb, pl. iii, figs. 1, 2.....                                           | 33-34 |
| <i>O. larva</i> , Lamarck, pl. iii, figs. 3, 7.....                                             | 34-36 |
| <i>Gryphaea</i> , Lam.....                                                                      | 36    |
| <i>G. vesicularis</i> , Lam. ? (1806), pl. iii, figs. 15, 16; pl. iv, figs. 1-3; and pl. v..... | 36-39 |
| <i>Exogyra</i> , Say.....                                                                       | 39    |
| <i>E. costata</i> , Say, pl. vi, figs. 1, 2.....                                                | 39-41 |

*Anomidae.*

|                                                                                |       |
|--------------------------------------------------------------------------------|-------|
| <i>Anomia</i> , Linn.....                                                      | 42    |
| <i>A. argentaria</i> , Morton, pl. iv, figs. 9-11.....                         | 42    |
| <i>A. tellinoides</i> , Morton, pl. iv, figs. 12, 13.....                      | 43    |
| <i>Diploechiza</i> , Conrad, 1860.....                                         | 43    |
| <i>D. eretacea</i> , Conrad, pl. iv, figs. 4-8.....                            | 43-44 |
| <i>Paranomia</i> , Conrad, 1860.....                                           | 44    |
| <i>P. scabra</i> , Morton, pl. x, fig. 10.....                                 | 44    |
| <i>P. lineata</i> , Conrad, pl. ix, fig. 10.....                               | 45    |
| <i>Pecten</i> , Klein.....                                                     | 45    |
| <i>P. venustus</i> , Mort., pl. vii, figs. 1-4.....                            | 45-46 |
| <i>P. quinquearius</i> , Conrad, 1854, pl. vii, figs. 13-16.....               | 47    |
| <i>P. tenuitatus</i> , Gabb, 1861, pl. vii, figs. 5, 6.....                    | 47-48 |
| <i>P. planicostatus</i> , n. s., Whitfield, 1885, pl. viii, figs. 10, 11.....  | 48-49 |
| <i>P. (Chlamys) craticulus</i> , Morton, pl. vii, figs. 17, 18.....            | 49-50 |
| <i>P. (Synchelonema?) perlamellosus</i> , pl. vii, fig. 7.....                 | 50-51 |
| <i>Amusium</i> , Klein.....                                                    | 51    |
| <i>A. simplicum</i> , Conrad, pl. vii, figs. 11, 12.....                       | 51-52 |
| <i>A. conradi</i> , n. s., Whitfield, 1885, pl. vii, figs. 8-10.....           | 52-53 |
| <i>Camptonectes (Amusium) burlingtonensis</i> , Gabb, pl. viii, figs. 3-9..... | 53-55 |
| <i>Camptonectes parvus</i> , n. s., Whitfield, 1885, pl. viii, figs. 1, 2..... | 55    |
| <i>Neithea</i> , Drouet.....                                                   | 56    |
| <i>N. quinquecostata</i> (Sowerby), pl. viii, figs. 12-14.....                 | 56-57 |

*Spondylidae.*

|                                                                               |       |
|-------------------------------------------------------------------------------|-------|
| <i>Spondylus</i> , Lam.....                                                   | 57    |
| <i>S. gregalis</i> , Morton, pl. ix, figs. 11, 12, and pl. x, figs. 1, 2..... | 57-58 |
| <i>Dianchora</i> , Sowerby.....                                               | 58-59 |
| <i>D. echinata</i> , Morton, pl. x, figs. 3-9.....                            | 59-60 |
| <i>Plicatula</i> , Lam.....                                                   | 61    |
| <i>P. artiosa</i> , Morton, pl. ix, figs. 1, 2.....                           | 61    |
| <i>Radula</i> , Klein.....                                                    | 61    |
| <i>R. pelagica</i> , Morton, pl. ix, figs. 3-5.....                           | 61-62 |
| <i>R. acutilineata</i> , Conrad, pl. ix, figs. 6, 7.....                      | 62-63 |
| <i>R. reticulata</i> , Lyell & Forbes, 1845, pl. ix, figs. 8, 9.....          | 63-64 |



|                                                                                   | Page.   |
|-----------------------------------------------------------------------------------|---------|
| <i>Heteromyaria</i> .                                                             |         |
| <i>Mytilidae</i> .                                                                |         |
| <i>Mytilus</i> , Linn. ....                                                       | 64      |
| <i>M. obliquus</i> , n. s., Whitfield, 1885, pl. xvii, fig. 1. ....               | 64      |
| <i>Modiola</i> , Lam. ....                                                        | 64      |
| <i>M. julia</i> , Lea, 1861, pl. xvii, figs. 6, 7? ....                           | 64-65   |
| <i>M. burlingtonensis</i> , n. s., Whitfield, 1885, pl. xvii, figs. 8, 9 ....     | 65-66   |
| <i>Lithodomus</i> , Cuvier. ....                                                  | 66      |
| <i>L. affinis</i> , Gabb, 1861, pl. xvii, figs. 2, 3. ....                        | 66-67   |
| <i>L. ripleyana</i> , Gabb, 1861, pl. xvii, figs. 4, 5. ....                      | 67-68   |
| <i>Pterida</i> , Meek (= <i>Aiculida</i> of Authors) ....                         | 68      |
| <i>Pteria</i> , Scopoli. ....                                                     | 68      |
| <i>P. petrosa</i> , Conrad, pl. xiv, fig. 10. ....                                | 68-69   |
| <i>P. laripes</i> , Morton, pl. xiv, fig. 9. ....                                 | 69-70   |
| <i>P. navicula</i> , n. s., Whitfield, 1885, pl. xiv, fig. 8. ....                | 70-71   |
| <i>Meleagrinella</i> , v. g., Whitfield, 1885. ....                               | 71-72   |
| <i>M. abrupta</i> , Conrad, pl. xiv, figs. 11-14. ....                            | 72-73   |
| <i>Gervillopsis</i> , n. g., Whitfield, 1885. ....                                | 73      |
| <i>G. ensiformis</i> , Conrad, pl. xv, figs. 8-11, and pl. xvi, fig. 5. ....      | 73-74   |
| <i>G. minima</i> , n. s., Whitfield, 1885, pl. xv, fig. 7. ....                   | 74-75   |
| <i>Inoceramus</i> , Sowerby. ....                                                 | 75      |
| <i>I. barabini</i> , Morton? pl. xv, figs. 3, 5. ....                             | 75-76   |
| <i>I. sagensis</i> , Owen, pl. xiv, fig. 15, and pl. xv, figs. 1, 2. ....         | 76-78   |
| <i>I. sagensis</i> var. <i>quadrans</i> , Whitfield, 1885, pl. xiv, fig. 16. .... | 79      |
| <i>I. perovialis</i> , Conrad, pl. xv, fig. 6. ....                               | 80      |
| <i>I. pro-obliquus</i> , n. s., Whitfield, 1885, pl. xiv, fig. 17. ....           | 80-81   |
| <i>Pinnidae</i> .                                                                 |         |
| <i>Pinna</i> , Linn. ....                                                         | 81      |
| <i>P. inqueata</i> , Conrad, pl. xvi, figs. 1, 2. ....                            | 81-82   |
| <i>Dimyaria</i> .                                                                 |         |
| <i>Arcidae</i> .                                                                  |         |
| <i>Arca</i> , Linn. ....                                                          | 82      |
| <i>A. altirostris</i> , Gabb, 1861, pl. xii, figs. 22, 23. ....                   | 82-83   |
| <i>Nemodon</i> , Conrad. ....                                                     | 83      |
| <i>N. eufaulensis</i> , Gabb, pl. xii, figs. 3-5. ....                            | 83-84   |
| <i>N. angulatum</i> , Gabb, 1860, pl. xii, figs. 6, 7. ....                       | 84-85   |
| <i>N. brevifrons</i> , Conrad, pl. xii, figs. 1, 2. ....                          | 85-86   |
| <i>Nemoearea</i> , Conrad, 1870. ....                                             | 86      |
| <i>N. eretacea</i> , Conrad, 1870, pl. xii, figs. 8-10. ....                      | 86-87   |
| <i>Breviarca</i> , Conrad. ....                                                   | 87      |
| <i>B. saffordi</i> , Gabb, pl. xii, figs. 11, 12. ....                            | 87-88   |
| <i>Trigonarca</i> , Conrad, 1862. ....                                            | 88      |
| <i>T. euneiformis</i> , Conrad, pl. xii, figs. 17, 18. ....                       | 88-89   |
| <i>T. transversa</i> , Gabb, 1861, pl. xii, figs. 13-16. ....                     | 89-91   |
| <i>Cibota</i> , Browne. ....                                                      | 91      |
| <i>C. rostellata</i> , Morton, pl. xi, figs. 34-36. ....                          | 91-92   |
| <i>C. uniopsis</i> , Conrad, pl. xi, figs. 32, 33. ....                           | 92-93   |
| <i>C. obesa</i> , n. s., Whitfield, 1885, pl. xi, figs. 30, 31. ....              | 93-94   |
| <i>C. multiradiata</i> , Gabb, 1860, pl. xi, figs. 21, 22. ....                   | 94      |
| <i>Idonearca</i> , Conrad, 1872. ....                                             | 95      |
| <i>I. tippana</i> , Conrad, pl. xii, figs. 19-21. ....                            | 95-96   |
| <i>I. antrosa</i> , Morton, pl. xiii, figs. 6-11. ....                            | 96-98   |
| <i>I. vulgaris</i> , Morton, pl. xiii, figs. 1-5. ....                            | 98-99   |
| <i>Azinea</i> , Poli. ....                                                        | 99      |
| <i>A. mortoni</i> , Conrad, pl. xi, figs. 23-25. ....                             | 99-101  |
| <i>A. alta</i> , n. s., Whitfield, 1885, pl. xi, figs. 26-29. ....                | 101     |
| <i>Nuculidae</i> .                                                                |         |
| <i>Nucula</i> , Lam. ....                                                         | 102     |
| <i>N. pererassa</i> , Conrad, pl. xi, figs. 4-6. ....                             | 102     |
| <i>N. monmouthensis</i> , n. s., Whitfield, 1885, pl. xi, fig. 1. ....            | 102-103 |
| <i>N. slackiana</i> , Gabb, pl. xi, figs. 2, 3. ....                              | 103-104 |
| <i>N. perequalis</i> , Conrad. ....                                               | 104-105 |
| <i>Nuculana</i> , Link. ....                                                      | 105     |
| <i>N. protecta</i> , Gabb, pl. xi, fig. 10. ....                                  | 105-106 |
| <i>N. gabbana</i> , n. s., Whitfield, 1885, pl. xi, figs. 11-13. ....             | 106-107 |
| <i>N. longifrons</i> , Conrad, pl. xi, figs. 16, 17. ....                         | 107-108 |

BULLETIN NO. 30, UNITED STATES NATIONAL MUSEUM.

|                                                                                                              | Page.   |
|--------------------------------------------------------------------------------------------------------------|---------|
| <i>N. pinnaformis</i> , Gabb, pl. xi, figs. 7, 8 .....                                                       | 108-109 |
| <i>N. compressifrons</i> , Conrad, pl. xi, fig. 9 .....                                                      | 110     |
| <i>Perriacota</i> , Conrad .....                                                                             | 110     |
| <i>P. protecta</i> , Conrad, pl. xi, figs. 14, 15 .....                                                      | 110     |
| <i>Nucularia</i> , Conrad .....                                                                              | 111     |
| <i>N. papyria</i> , Conrad, pl. xi, figs. 18-20 .....                                                        | 111-112 |
| <i>Trigonida</i> .                                                                                           |         |
| <i>Trigonia</i> , Brug. ....                                                                                 | 112     |
| <i>T. mortoni</i> , n. s., Whitfield, 1885, pl. xiv, figs. 5, 6 .....                                        | 112-113 |
| <i>T. eufaulensis</i> , Gabb, pl. xiv, figs. 1-4 .....                                                       | 113-114 |
| <i>T. aculea</i> , n. s., Whitfield, 1885, pl. xiv, fig. 7 .....                                             | 114-115 |
| <i>Siphonida</i> .                                                                                           |         |
| <i>Integripalliatia</i> .                                                                                    |         |
| <i>Crasatellidae</i> .                                                                                       |         |
| <i>Crasatella</i> , Lam. ....                                                                                | 115-116 |
| <i>C. radosa</i> , Morton f., pl. xvii, figs. 12-15 .....                                                    | 116-117 |
| <i>C. cuneata</i> , Gabb, pl. xvii, figs. 18-20 .....                                                        | 118-119 |
| <i>C. delawarensis</i> , Gabb .....                                                                          | 119     |
| <i>C. mummouthensis</i> , Gabb, pl. xvii, figs. 21, 22 .....                                                 | 119-120 |
| <i>C. prora</i> , Conrad, pl. xvii, figs. 10, 11 .....                                                       | 120-121 |
| <i>C. subgemma</i> , Conrad, pl. xviii, figs. 14-16 .....                                                    | 121-122 |
| <i>C. transversa</i> , Gabb, 1861, pl. xvii, figs. 16, 17 .....                                              | 122-123 |
| <i>Semibula</i> , Conrad, 1869 .....                                                                         | 123     |
| <i>S. perplana</i> , Conrad, pl. xviii, figs. 8-10 .....                                                     | 123-124 |
| <i>Astartidae</i> .                                                                                          |         |
| <i>Astartis</i> , Ad. ....                                                                                   | 124     |
| <i>A. decemmaria</i> , Conrad, pl. xviii, fig. 4 .....                                                       | 124-125 |
| <i>A. conradi</i> , n. s., Whitfield, 1885, pl. xviii, figs. 1-3 .....                                       | 125-126 |
| <i>A. dentata</i> , Conrad, pl. xviii, fig. 11 .....                                                         | 126     |
| <i>A. parvula</i> , Conrad, pl. xviii, figs. 12, 13 .....                                                    | 126-127 |
| <i>Fabriciaria</i> , Conrad, 1872 .....                                                                      | 127     |
| <i>F. octolirata</i> , Gabb .....                                                                            | 127-128 |
| <i>F. crenulirata</i> , Lea, 1861, pl. xviii, figs. 5-7 .....                                                | 128-129 |
| <i>Laciniidae</i> .                                                                                          |         |
| <i>Lacina</i> , Brug. ....                                                                                   | 129     |
| <i>L. arctata</i> , Conrad, pl. xviii, figs. 23-25 .....                                                     | 129-130 |
| <i>L. smockana</i> , n. s., Whitfield, 1885, pl. xviii, figs. 21, 22 .....                                   | 130-131 |
| <i>Chamidae</i> .                                                                                            |         |
| <i>Chama</i> , Lam. ....                                                                                     | 131     |
| <i>D. dactylodonta</i> , n. s., Whitfield, 1885, pl. xviii, figs. 26, 27 .....                               | 131     |
| <i>Cardiidae</i> .                                                                                           |         |
| <i>Cardium</i> , Linn. ....                                                                                  | 132     |
| <i>C. eufaulensis</i> , Conrad, pl. xx, figs. 17-19 .....                                                    | 132     |
| <i>C. ripigenum</i> , Conrad, pl. xx, fig. 14 .....                                                          | 132-133 |
| <i>C. ripigenae</i> , Conrad .....                                                                           | 133     |
| <i>Oricoardium</i> , Conrad, 1870 .....                                                                      | 133     |
| <i>Cardium</i> ( <i>Oricoardium</i> ) <i>dumosum</i> , Conrad, pl. xx, figs. 9-13 .....                      | 133-135 |
| <i>Cardium</i> ( <i>Oricoardium</i> ) <i>multiradiatum</i> , Gabb, pl. xxi, figs. 1-3 .....                  | 135-136 |
| <i>Procardium</i> , Beyrich .....                                                                            | 136     |
| <i>C. (Procardium) perelongatum</i> , n. s., Whitfield, 1885, pl. xx, figs. 20-22; pl. xxi, figs. 4, 5 ..... | 136-138 |
| <i>Pachycardium</i> , Conrad, 1870 .....                                                                     | 138     |
| <i>P. duringtonense</i> , n. s., Whitfield, 1885, pl. xxi, figs. 6, 7 .....                                  | 138     |
| <i>Pubia</i> , Grey, 1847 .....                                                                              | 139     |
| <i>P. imula</i> , n. s., Whitfield, 1885, pl. xx, fig. 8 .....                                               | 139     |
| <i>Pragum</i> , Bolton .....                                                                                 | 139     |
| <i>P. tenuistriatum</i> , n. s., Whitfield, 1885, pl. xx, figs. 15, 16 .....                                 | 139-140 |
| <i>Isopistha</i> , Meek .....                                                                                | 140     |
| <i>I. gracilis</i> , Conrad, pl. xx, figs. 1-3 .....                                                         | 140-141 |
| <i>I. elongata</i> , Roemer .....                                                                            | 141-142 |
| <i>I. indica</i> , n. s., Whitfield, 1885, pl. xx, figs. 4, 5 .....                                          | 142     |
| <i>Cymella</i> , Meek .....                                                                                  | 142     |
| <i>C. meeki</i> , Whitfield, pl. xx, figs. 6, 7 .....                                                        | 142-143 |
| <i>Aggrynidae</i> .                                                                                          |         |
| <i>Aggryna</i> , Stolicka .....                                                                              | 144     |
| <i>A. ...</i> , n. s., Whitfield, 1885, pl. xix, figs. 8-10 .....                                            | 144-145 |



|                                                                           | Page.   |
|---------------------------------------------------------------------------|---------|
| <i>V. decisa</i> , Morton, pl. xix, figs. 15, 16.....                     | 145-147 |
| <i>V. infata</i> , Conrad, pl. xix, figs. 4, 5.....                       | 147-148 |
| <i>V. elevata</i> , Conrad, pl. xix, figs. 6, 7.....                      | 148-149 |
| <i>V. trigona</i> , Gabb, 1861, pl. xix, figs. 11-14.....                 | 149-150 |
| <i>V. subovalis</i> , Conrad, pl. xix, figs. 1, 2.....                    | 150-151 |
| <i>V. trapezoidea</i> , Conrad, pl. xix, fig. 3.....                      | 151-152 |
| <i>Sphaeriola</i> , Stoliczka.....                                        | 152     |
| <i>S. umbonata</i> , n. s., Whitfield, 1885, pl. xix, figs. 17, 18.....   | 152     |
| <i>Sinuopalliatæ.</i>                                                     |         |
| <i>Veneridæ.</i>                                                          |         |
| <i>Callista</i> , Poli.....                                               | 153     |
| <i>C. delawarensis</i> , Gabb, pl. xxii, figs. 8-10.....                  | 153-154 |
| <i>Aphrodina</i> , Conrad, 1868.....                                      | 154     |
| <i>A. tippana</i> , Conrad, pl. xxii, figs. 6, 7.....                     | 154-155 |
| <i>Oyprineria</i> , Conrad, 1864.....                                     | 156     |
| <i>C. depressa</i> , Conrad, pl. xxii, figs. 11-13.....                   | 156-157 |
| <i>C. densata</i> , Conrad, pl. xxii, figs. 19-21.....                    | 157-158 |
| <i>C. excavata</i> , Morton, pl. xxi, figs. 16, 17.....                   | 159-160 |
| <i>C. heilprini</i> , n. s., Whitfield, 1885, pl. xxii, figs. 14, 15..... | 160     |
| <i>C. spissa</i> , Conrad, pl. xxii, fig. 18.....                         | 160-161 |
| <i>Dorinia</i> , Scopoli.....                                             | 161     |
| <i>D. gabbii</i> , n. s., Whitfield, 1885, pl. xxii, figs. 4, 5.....      | 161-162 |
| <i>D. erecta</i> , n. s., Whitfield, 1885, pl. xviii, figs. 17-20.....    | 162-163 |
| <i>Tenea</i> , Conrad, 1871.....                                          | 163     |
| <i>T. pinquis</i> , Conrad, pl. xxii, figs. 1-3.....                      | 163-164 |
| <i>Tellinidæ.</i>                                                         |         |
| <i>Tellimera</i> , Conrad, 1871.....                                      | 164     |
| <i>T. eborea</i> , Conrad, pl. xxiii, figs. 12, 13.....                   | 164-165 |
| <i>Linearia</i> , Conrad, 1871.....                                       | 165     |
| <i>L. metastrata</i> , Conrad, pl. xxiii, figs. 6-8.....                  | 165-166 |
| <i>L. contracta</i> , n. s., Whitfield, 1885, pl. xxiii, fig. 5.....      | 167     |
| <i>Æora</i> , Conrad, 1871.....                                           | 167     |
| <i>Æ. cretacea</i> , Conrad, pl. xxiii, figs. 16, 17.....                 | 167-168 |
| <i>Aenona</i> , Conrad, 1871.....                                         | 168     |
| <i>Æ. eufaulensis</i> , Conrad, pl. xxiii, figs. 2, 3.....                | 168-169 |
| <i>Æ. papyria</i> , Conrad, pl. xxiii, fig. 4.....                        | 169-170 |
| <i>Corimya</i> , Agassiz.....                                             | 170     |
| <i>C. tennis</i> , n. s., Whitfield, 1885, pl. xxiii, figs. 9-11.....     | 170-171 |
| <i>Donacínidæ.</i>                                                        |         |
| <i>Donax</i> , Linn.....                                                  | 171     |
| <i>D. fordii</i> , Conrad, pl. xxiii, fig. 1.....                         | 171-172 |
| <i>Macridæ.</i>                                                           |         |
| <i>Veleda</i> , Conrad, 1871.....                                         | 172     |
| <i>V. lutea</i> , Conrad, pl. xxiii, figs. 18-21.....                     | 172-173 |
| <i>V. tellinoides</i> , n. s., Whitfield, 1885, pl. xxiii, fig. 23.....   | 173-174 |
| <i>V. transversa</i> , n. s., Whitfield, 1885, pl. xxiii, fig. 22.....    | 174     |
| <i>Anatinidæ.</i>                                                         |         |
| <i>Pholadomya</i> , Sowerby.....                                          | 175     |
| <i>P. occidentalis</i> , Morton, pl. xxiv, figs. 1-3.....                 | 175-176 |
| <i>P. roemeri</i> , n. s., Whitfield, 1885, pl. xxiv, fig. 4.....         | 176-177 |
| <i>Periplomya</i> , Conrad.....                                           | 177     |
| <i>P. elliptica</i> , Gabb, 1861, pl. xxiii, figs. 14, 15.....            | 177-178 |
| <i>Cercomya</i> , Agassiz.....                                            | 178     |
| <i>C. peculiaris</i> , Conrad, pl. xxiii, figs. 24, 25.....               | 178     |
| <i>Corbulidæ.</i>                                                         |         |
| <i>Corbula</i> , Brugnière.....                                           | 178     |
| <i>C. crassiplica</i> , Gabb, pl. xxiii, fig. 30.....                     | 178-179 |
| <i>C. foulkei</i> , Lea, 1861, pl. xxiii, figs. 27-29.....                | 180     |
| <i>C. subcompressa</i> , Gabb, pl. xxiii, fig. 26.....                    | 180-181 |
| <i>Saxicavidæ.</i>                                                        |         |
| <i>Panopea</i> , Ménard.....                                              | 181     |
| <i>P. decisa</i> , Conrad, pl. xxiv, figs. 5-8.....                       | 181-182 |
| <i>Solenidæ.</i>                                                          |         |
| <i>Solyma</i> , Conrad, 1871.....                                         | 182     |
| <i>S. lineolata</i> , Conrad, pl. xxv, figs. 11-13.....                   | 182-183 |

|                                                                                                | Page.   |
|------------------------------------------------------------------------------------------------|---------|
| <i>Leptosolen</i> , Conrad, pl. xxv, figs. 1-2 .....                                           | 183-184 |
| <i>Legumen</i> , Conrad, 1858 .....                                                            | 184     |
| <i>L. planulatum</i> , Conrad, xxv, figs. 3-4 .....                                            | 184-185 |
| <i>L. appressum</i> , Conrad, pl. xxv, figs. 6-8 .....                                         | 185-188 |
| <i>Siliqua</i> , Muhlfeld .....                                                                | 188     |
| <i>S. cretacea</i> , Gabb, pl. xxv, figs. 9, 10 .....                                          | 185-187 |
| <i>Pholadida</i> .                                                                             |         |
| <i>Pholas</i> , Linn. ....                                                                     | 187     |
| <i>P. cithara</i> , Morton, pl. xxv, 14-16 .....                                               | 187-188 |
| <i>P. f. lata</i> , n. s., Whitfield, 1885, pl. xxv, fig. 17 .....                             | 189-190 |
| <i>Mortesia</i> , Leach .....                                                                  | 190     |
| <i>M. (Pholas) cretacea</i> , Gabb, pl. xxv, figs. 20-23 .....                                 | 190     |
| <i>Teredida</i> .                                                                              |         |
| <i>Teredo</i> , Linn. ....                                                                     | 191     |
| <i>T. irregularis</i> , Gabb, pl. xxv, figs. 18, 19 .....                                      | 191-192 |
| <i>Gastrochaenida</i> .                                                                        |         |
| <i>Clavagella</i> , Lam. ....                                                                  | 192     |
| <i>C. armata</i> , Morton, pl. xxv, fig. 24 .....                                              | 192-194 |
| Section iv.—Lamellibranchiata from the Middle Marl Beds.                                       |         |
| <i>Ostreida</i> .                                                                              |         |
| <i>Gryphaea</i> , Lam. ....                                                                    | 194     |
| <i>G. vesicularis</i> , Lam., pl. xxvi, figs. 9, 10 .....                                      | 194     |
| <i>G. bryani</i> , var. <i>precedens</i> , n. var., Whitfield, 1885, pl. xxvi, figs. 7-8 ..... | 194-195 |
| <i>Gryphaostrea</i> , Conrad .....                                                             | 195     |
| <i>G. vomer</i> , Morton, pl. xxvi, figs. 11-12 .....                                          | 195-196 |
| <i>Mytilida</i> .                                                                              |         |
| <i>Modiola</i> , Lam. ....                                                                     | 197     |
| <i>M. orata</i> , Gabb, pl. xxvi, figs. 13-14 .....                                            | 197     |
| <i>M. (Lithodomus?) inflata</i> , n. s., Whitfield, 1885, pl. xxvi, figs. 1-2 .....            | 197-198 |
| <i>Pterida</i> , Meek.                                                                         |         |
| <i>Pinna</i> , Linn. ....                                                                      | 198     |
| <i>P. rostriformis</i> , Morton, pl. xvi, figs. 3-4 .....                                      | 198     |
| <i>Arcida</i> .                                                                                |         |
| <i>Idonearca</i> , Conrad .....                                                                | 199     |
| <i>I. medians</i> , n. s., Whitfield, 1885, pl. xxvi, figs. 5-6 .....                          | 199     |
| <i>I. compressirostra</i> , n. s., Whitfield, 1885, pl. xxvi, figs. 15-16 .....                | 199-200 |
| <i>Isocardida</i> .                                                                            |         |
| <i>Isocardia</i> , Lamarck .....                                                               | 200     |
| <i>I. conradi</i> , Gabb, pl. xxvi, figs. 3-4 .....                                            | 200-201 |
| <i>Teredida</i> .                                                                              |         |
| <i>Teredo</i> , Linnaeus .....                                                                 | 201     |
| <i>T. tibialis</i> , Morton, pl. xxvi, figs. 19-22 .....                                       | 201-203 |
| <i>Gastrochaenida</i> .                                                                        |         |
| <i>Gastrochana</i> , Spengl .....                                                              | 203     |
| <i>G. americana</i> , Gabb, pl. xxvi, figs. 17-18 .....                                        | 203-204 |
| Section V.—Lamellibranchiata from the lower layers of the Upper Marl Beds of New Jersey.       |         |
| <i>Ostreida</i> .                                                                              |         |
| <i>Ostrea</i> , Linnaeus .....                                                                 | 205     |
| <i>O. glandiformis</i> , n. s., Whitfield, 1885, pl. xxvii, figs. 1-5 .....                    | 205-206 |
| <i>Gryphaea</i> , Sow .....                                                                    | 206     |
| <i>G. bryani</i> , Gabb, 1876, pl. xxvii, figs. 6-9 .....                                      | 206-207 |
| <i>Mytilida</i> .                                                                              |         |
| <i>Modiola</i> , Lam. ....                                                                     | 207     |
| <i>M. johnsoni</i> , n. s., Whitfield, 1885, pl. xxviii, figs. 8, 9 .....                      | 207     |
| <i>Arcida</i> .                                                                                |         |
| <i>Area</i> , Linn. ....                                                                       | 208     |
| <i>A. quindecemradiata</i> , Gabb, 1860, pl. xxvii, figs. 10-13 .....                          | 208     |
| <i>Antartida</i> .                                                                             |         |
| <i>Cardita</i> , Brug. ....                                                                    | 209     |
| <i>C. intermedia</i> , n. s., Whitfield, 1885, pl. xxviii, figs. 14, 15 .....                  | 209     |
| <i>Crasatella</i> , Lamarck .....                                                              | 209     |
| <i>C. conradi</i> , n. s., Whitfield, 1885, pl. xxviii, figs. 1-5 .....                        | 209-210 |
| <i>C. delawarensis</i> , Gabb, pl. xxvii, figs. 14, 15 .....                                   | 210-211 |



|                                                                                                | Page.   |
|------------------------------------------------------------------------------------------------|---------|
| <i>C. littoralis</i> , Conrad, pl. xxviii, figs. 6, 7.....                                     | 212-213 |
| <i>C. rhombea</i> , n. s., Whitfield, 1885, pl. xxvii, figs. 16-19.....                        | 213-214 |
| <i>Cardiidae</i> .                                                                             |         |
| <i>Criocardium</i> , Conrad.....                                                               | 214     |
| <i>C. nucleolus</i> , n. s., Whitfield, 1885, pl. xxviii, figs. 10, 11.....                    | 214-215 |
| <i>Cyprinidae</i> .                                                                            |         |
| <i>Veniella</i> , Stoliczka.....                                                               | 215     |
| <i>V. rhomboidea</i> , Conrad, pl. xxviii, figs. 12, 13.....                                   | 215-216 |
| <i>Petricolidae</i> .                                                                          |         |
| <i>Petricola</i> , Lam.....                                                                    | 216     |
| <i>P. nova-egyptica</i> , n. s., Whitfield, 1885, pl. xxviii, fig. 22.....                     | 216-217 |
| <i>Maetridae</i> .                                                                             |         |
| <i>Veleda</i> , Conrad, 1871.....                                                              | 217     |
| <i>V. nasuta</i> , n. s., Whitfield, 1885, pl. xxviii, fig. 23.....                            | 217     |
| <i>Veneridae</i> .                                                                             |         |
| <i>Caryatis</i> , Roemer.....                                                                  | 218     |
| <i>C. ? ceta</i> , n. s., Whitfield, 1885, pl. xxviii, figs. 16-19.....                        | 218-219 |
| <i>Saxicavidae</i> .                                                                           |         |
| <i>Panopea</i> , Ménéard.....                                                                  | 219     |
| <i>P. elliptica</i> , n. s., Whitfield, 1885, pl. xxviii, figs. 24, 25.....                    | 219-220 |
| <i>Anatinidae</i> .                                                                            |         |
| <i>Periplomya</i> , Conrad.....                                                                | 220     |
| <i>P. truncata</i> , n. s., Whitfield, 1885, pl. xxviii, figs. 20, 21.....                     | 220-221 |
| Section VI.—Lamellibranchiata from the Eocene marls of New Jersey.                             |         |
| <i>Ostreidae</i> .                                                                             |         |
| <i>Ostrea</i> , Linnæus.....                                                                   | 222     |
| <i>O. glauconoides</i> , n. s., Whitfield, 1885, pl. xxix, fig. 2.....                         | 222-223 |
| <i>O. (Alectronia?) linguaefelis</i> , n. s., Whitfield, 1885, pl. xxix, fig. 1.....           | 223     |
| <i>Gryphæa</i> , Lam.....                                                                      |         |
| <i>G. vesicularis</i> , Lam., pl. xxix, figs. 7, 8.....                                        | 224     |
| <i>Pectenidae</i> .                                                                            |         |
| <i>Pecten</i> , Klein.....                                                                     | 224     |
| <i>P. knesiskerni</i> , Conrad, pl. xxix, figs. 3-5.....                                       | 224-226 |
| <i>P. rigbyi</i> , n. s., Whitfield, 1885, pl. xxix, fig. 6.....                               | 226     |
| <i>Acinula annosa</i> , Conrad, pl. xxix, fig. 9.....                                          | 226-227 |
| <i>Nuculidae</i> .                                                                             |         |
| <i>Nucula</i> , Lam.....                                                                       | 227     |
| <i>N. circe</i> , n. s., Whitfield, 1885, pl. xxix, fig. 12.....                               | 227-228 |
| <i>Nuculana</i> , Mörch.....                                                                   | 228     |
| <i>N. albaria</i> , Conrad, pl. xxix, figs. 15, 16.....                                        | 228-229 |
| <i>Nucularia</i> , Conrad.....                                                                 | 229     |
| <i>N. secunda</i> , n. s., Whitfield, 1885, pl. xxix, figs. 13, 14.....                        | 229-230 |
| <i>Axinea</i> , Poli.....                                                                      | 230     |
| <i>A. conradi</i> , n. s., Whitfield, 1885, pl. xxix, figs. 10, 11.....                        | 230     |
| <i>Astartidae</i> .                                                                            |         |
| <i>Astarte</i> , Sowerby.....                                                                  | 231     |
| <i>A. castanella</i> , n. s., Whitfield, 1885, pl. xxx, figs. 1, 2.....                        | 231     |
| <i>A. planimarginata</i> , n. s., Whitfield, 1885, pl. xxx, figs. 3, 4.....                    | 232     |
| <i>Cardita</i> , Brug.....                                                                     | 232     |
| <i>C. perantiqua</i> , Conrad, pl. xxx, figs. 8-10.....                                        | 232-233 |
| <i>C. brittoni</i> , n. s., Whitfield, 1885, pl. xxx, figs. 11, 12.....                        | 233-234 |
| <i>Crassatella</i> , Lam.....                                                                  | 234     |
| <i>C. alta</i> , Conrad, pl. xxix, fig. 17.....                                                | 234-235 |
| <i>C. obliquata</i> , n. s., Whitfield, 1885, pl. xxix, fig. 18, and pl. 30, figs. 13, 14..... | 235-236 |
| <i>Cardiidae</i> .                                                                             |         |
| <i>Protocardium</i> , Beyr.....                                                                | 236     |
| <i>P. eurtum</i> , Conrad, 1870, pl. xxx, figs. 5-7.....                                       | 236-237 |
| <i>Veneridae</i> .                                                                             |         |
| <i>Caryatis</i> , Roemer.....                                                                  | 237     |
| <i>C. ovalis</i> , n. s., Whitfield, 1885, pl. xxx, figs. 15, 16.....                          | 237-238 |
| <i>Maetridae</i> .                                                                             |         |
| <i>Veleda</i> , Conrad, 1871.....                                                              | 238     |
| <i>V. equilatera</i> , n. s., Whitfield, 1885, pl. xxx, fig. 17.....                           | 238-239 |

BULLETIN NO. 30, UNITED STATES NATIONAL MUSEUM.

|                                                                                                             | Page    |
|-------------------------------------------------------------------------------------------------------------|---------|
| <i>Corbula</i> .                                                                                            |         |
| <i>Corbula</i> , Brug.....                                                                                  | 230     |
| <i>O. (Necara) nasutoidea</i> , n. s., Whitfield, 1885, pl. xxx, figs. 18, 19.....                          | 230-240 |
| <i>Necara</i> , Grey.....                                                                                   | 240     |
| <i>N. aquisalensis</i> , n. s., Whitfield, 1885, pl. xxx, figs. 20, 21.....                                 | 240-241 |
| <i>Pholadidea</i> .                                                                                         |         |
| <i>Parapholas</i> , Conrad, 1848.....                                                                       | 241     |
| <i>P. knesiskerni</i> , n. s., Whitfield, 1885, pl. xxx, figs. 22-24.....                                   | 241-242 |
| <i>Terididea</i> .                                                                                          |         |
| <i>Teredo</i> , Linn.....                                                                                   | 242     |
| <i>T. emacerata</i> , n. s., Whitfield, 1885, pl. xxx, fig. 25.....                                         | 242     |
| Section VII.—Unionidea, from the clays at Fish House, Camden County.                                        |         |
| <i>Unionidea</i> .                                                                                          |         |
| <i>Unio</i> , Retzius.....                                                                                  | 244     |
| <i>U. nasutoidea</i> , Lea, 1868, pl. xxxiv, figs. 4, 5.....                                                | 244-245 |
| <i>U. radiatoides</i> , Lea, 1868, pl. xxxiv, figs. 1-3.....                                                | 245-246 |
| <i>U. subrotundoides</i> , Lea, 1868, pl. xxxii, fig. 5.....                                                | 245-247 |
| <i>U. cariosoides</i> , Lea, 1868, pl. xxxii, fig. 3.....                                                   | 247     |
| <i>U. humerosoides</i> , Lea, 1868, pl. xxxi, fig. 4.....                                                   | 248     |
| <i>U. roanokoides</i> , Lea, 1868, pl. xxxi, fig. 3, and pl. xxxiii, figs. 1, 2, and pl. xxxiv, fig. 7..... | 248-249 |
| <i>U. ligamentinoides</i> , Lea, 1868, pl. xxxi, fig. 1, and pl. xxxii, fig. 4, and pl. xxxiv, fig. 8.....  | 249     |
| <i>U. alatoidea</i> , Lea, 1868, pl. xxxiii, figs. 2, 4, and pl. xxxiv, fig. 6.....                         | 249-250 |
| <i>U. prænodontoides</i> , n. s., Whitfield, 1885, pl. xxxi, fig. 2.....                                    | 250     |
| <i>U. rectoides</i> , n. s., Whitfield, 1885, pl. xxxii, figs. 1, 2.....                                    | 250-251 |
| <i>Anodonta</i> , Cuvier.....                                                                               | 251     |
| <i>A. grandoides</i> , Lea, 1868, pl. xxxv, figs. 2, 3.....                                                 | 251-252 |
| <i>A. corpulentoides</i> , Lea, 1868, pl. xxxv, fig. 1.....                                                 | 252     |
| Section VIII. Appendix.                                                                                     |         |
| Classified list of the species described in this volume.....                                                | 252-264 |

6.

FIELD, R. P., and HALL, JAMES. (See Hall, James, and Whitfield, R. P.)  
 FIELD, R. P., and WHITE, C. A. (See White, C. A., and Whitfield, R. P.)



# SUPPLEMENT.

## THE WRITINGS OF J. W. BAILEY.

BAILEY, J. W. Notes concerning the minerals and fossils collected by Lieutenant J. W. Abert, while engaged in the geographical examination of New Mexico. <Rep. of Lieut. J. W. Abert of his Examination of New Mexico in the years 1846-'47. Ex. Doc. No. 41, pp. 547-548, and 3 plates. Washington [1849].

Plate [I] faces p. 522, and contains fossil leaves from the coal beds of the Raton.

Plate [II] faces p. 546, and contains sharks' teeth and some *Gasteropoda* from Poblazon and an [*Athyria*] from Tuerlo.

Plate [III] faces p. 547, and contains an *Inoceramus* [*problematicus*] and a fossil leaf from the coal bed at Raton.

## THE WRITINGS OF I. N. NICOLLET.

NICOLLET, I. N. List of Fossils belonging to the several formations alluded to in the Report; arranged according to localities. <Rep. intended to illustrate a Map of the Hydrographical basin of the Upper Mississippi river made by I. N. Nicollet. 26th Congress, 2d session, Senate Ex. Doc. No. 237. Appendix C, pp. 167-170. Washington, 1843.

|                                                      | Page. |
|------------------------------------------------------|-------|
| <i>Atrypa lingulata</i> , n. s., Nicollet, 1843..... | 167   |
| <i>Ostrea congesta</i> , Conrad .....                | 169   |

A large number of fossils are mentioned by their generic names and said to be new species, but no specific name is given and they are not described.

## THE WRITINGS OF HIRAM A. PROUT.

### I.

PROUT, H. A. Description of New Species of Bryozoa from Texas and New Mexico, collected by Dr. George G. Shumard, Geologist of the U. S. Expedition for Boring Artesian Wells along the 32d Parallel, under the direction of Capt. John Pope, U. S. Corps Top. Eng. <Trans. St. Louis Acad. Sci., vol. i, pp. 228-235. 1858. St. Louis, 1856-'60.

|                                                                | Page.   |
|----------------------------------------------------------------|---------|
| <i>Fenestella trituberculata</i> , n. s., Prout, 1858.....     | 228-229 |
| <i>Fenestella popeana</i> , n. s., Prout, 1858 .....           | 229-230 |
| <i>Fenestella corticata</i> , n. s., Prout, 1858 .....         | 230     |
| <i>Fenestella intermedia</i> , n. s., Prout, 1858 .....        | 231     |
| <i>Fenestella variabilis</i> , n. s., Prout, 1858 .....        | 231-232 |
| <i>Fenestella shumardii</i> , n. s., Prout, 1858 .....         | 232     |
| <i>Fenestella norwoodiana</i> , n. s., Prout, 1858 .....       | 233     |
| <i>Fenestella subretiformis</i> , n. s., Prout, 1858 .....     | 233-234 |
| <i>Eschara</i> ? <i>concentrica</i> , n. s., Prout, 1858 ..... | 234     |
| <i>Eschara</i> ? <i>tuberculata</i> , n. s., Prout, 1858 ..... | 234-235 |

## 2.

PROUT, H. A. Second Series of Descriptions of Bryozoa from the Palaeozoic Rocks of the Western States and Territories. <Trans. St. Louis Acad. Sci., vol. i, pp. 265-273, pl. xvi, figs. 2 a. b. 1858. St. Louis, 1856-'60.

## PREMIAN SPECIES.

|                                                                                | Page    |
|--------------------------------------------------------------------------------|---------|
| <i>Polyporus mercedensis</i> , n. s., Prout, 1858, pl. xvi, figs. 2 a, b ..... | 270-271 |

## THE WRITINGS OF BENJAMIN F. SHUMARD.

SHUMARD, B. F. Paleontology. <Rep. of a geological exploration from Fort Leavenworth to Bryan's Pass, made in connection with the survey of a road from Fort Riley to Bridger's Pass, under command of Lieutenant F. T. Bryan, topographical engineer, 1856, by H. Engelmann, geologist and mining engineer. <Rep. of the Secretary of War. Message from the President of the U. S. to the 35th Congress, 1st session, Ex. Doc. No. 2, vol. ii, pp. 517-520. Washington, 1857.

(Gives two lists and notes of fossils, and describes one new species *Mytilus engelmanni*.)

## FOSSILS OF THE COAL MEASURES.

|                                                        | Page    |
|--------------------------------------------------------|---------|
| <i>Brachiopoda.</i>                                    |         |
| <i>Productus splendens</i> , Norwood & Pratt .....     | 52      |
| <i>Productus rilliersi</i> , D'Orbigny .....           | 52      |
| <i>Productus nebrascensis</i> , Owen, D. D. ....       | 51      |
| <i>Productus equicostatus</i> , Shumard .....          | 52      |
| <i>Productus semireticulatus</i> , Mart., sp. ....     | 52      |
| <i>Chonetes smithii</i> , Norwood & Pratt .....        | 52      |
| <i>Terebratula ? subtilis</i> , Hall .....             | 52      |
| <i>Spirifer plano-concave</i> , Shumard .....          | 52      |
| <i>Spirifer menardianus</i> , Roemer, F. ....          | 518-520 |
| <i>Spirifer brachycephalus</i> , Shumard .....         | 52      |
| <i>Rhynchonella</i> — ? .....                          | 52      |
| <i>Atrypa</i> — ? .....                                | 52      |
| <i>Orthis umbrellata</i> ? Bach, sp. ....              | 52      |
| <i>Amphala</i>                                         |         |
| <i>Mytilus subquadratus</i> , Shumard .....            | 52      |
| <i>Mytilus engelmanni</i> , n. s., Shumard, 1857 ..... | 52      |
| <i>Arca</i> — ? .....                                  | 52      |
| <i>Pecten occidentalis</i> , Shumard .....             | 52      |
| <i>Arctia</i> — ? .....                                | 52      |

## FOSSILS OF THE CRETACEOUS FORMATION.

|                                                           |    |
|-----------------------------------------------------------|----|
| <i>Ammonoites parvulus</i> ? H. & M. ....                 | 52 |
| <i>Amphites mendocinus</i> , Morton, sp. ....             | 52 |
| <i>Amphites unicolor</i> , Morton, sp. ....               | 52 |
| <i>Helicella nebrascensis</i> , Evans & Shumard .....     | 52 |
| <i>Helicella nebrascensis</i> , Conrad .....              | 52 |
| <i>Peroniceras crispum</i> , Mansell .....                | 52 |
| <i>Peroniceras harlesi</i> , Morton .....                 | 52 |
| <i>Peroniceras nebrascense</i> ? (Owen, D. D.) .....      | 52 |
| <i>Peroniceras typica</i> , H. & M. ....                  | 52 |
| <i>Peroniceras</i> sp., n. s., Shumard, Hall & Meek ..... | 52 |
| <i>Arca shumardi</i> , M. & H. ....                       | 52 |
| Vertebral makes and the bones of fishes .....             | 52 |

# INDEX OF GENERA AND SPECIES.

[The page numbers in heavy type indicate references to the original descriptions.]

| A.                                   | Page.                       |                                                    | Page.                                               |
|--------------------------------------|-----------------------------|----------------------------------------------------|-----------------------------------------------------|
| <i>Abra? formosa</i> .....           | 48                          | <i>Actæon intercalaris</i> .....                   | <b>94</b>                                           |
| <i>Acambona</i> .....                | <b>119</b>                  | <i>melanellus</i> .....                            | 221                                                 |
| <i>pinna</i> .....                   | 129                         | <i>pygmaeus</i> .....                              | 221                                                 |
| <i>Acanthocardium</i> .....          | 99                          | ( <i>Solidula</i> ) <i>attenuata</i> .....         | <b>18</b>                                           |
| <i>Acanthocladia americana</i> ..... | 19, 257                     | <i>striatus</i> .....                              | 221                                                 |
| <i>Acanthotelson</i> .....           | <b>36</b> , 46, 53, 61, 179 | <i>subellipticus</i> .....                         | <b>14</b> , 101                                     |
| <i>eveni</i> .....                   | <b>53</b> , 61, 179         | <i>woosteri</i> .....                              | <b>143</b>                                          |
| <i>inæqualis</i> .....               | <b>36</b> , 46              | <i>Actæonella</i> .....                            | 29, 210                                             |
| <i>stimpsoni</i> .....               | <b>36</b> , 40, 61, 179     | <i>syriaca</i> .....                               | <b>210</b>                                          |
| <i>Acanthotelsonidae</i> .....       | 36                          | <i>Actæonema striata</i> .....                     | 220                                                 |
| <i>Acar</i> .....                    | 98                          | <i>sulcata</i> .....                               | 220                                                 |
| <i>Acella</i> .....                  | 106, 141, 161               | <i>Actæonidae</i> .....                            | 101                                                 |
| <i>haldemani</i> .....               | <b>141</b> , 161            | <i>Actæonina</i> .....                             | 29, 86, 143                                         |
| <i>Acephala</i> .....                | 225, 232, 255, 258, 274     | <i>biplicata</i> .....                             | 48                                                  |
| <i>Aceruularia</i> .....             | 108, 150, 155, 163, 223     | <i>minuta</i> .....                                | 86                                                  |
| <i>adjunctiva</i> .....              | <b>150</b> , 163            | <i>naticoides</i> .....                            | 48                                                  |
| <i>dauidsoni</i> .....               | 155                         | <i>prosocheila</i> .....                           | <b>143</b>                                          |
| <i>pentagona</i> .....               | 108, 102                    | <i>Actæoninae</i> .....                            | 29                                                  |
| <i>Acidaspis</i> .....               | 57, 79, 186                 | <i>Actinaria</i> .....                             | 96, 142, 165                                        |
| <i>ceralepta</i> .....               | 79                          | <i>Actinoceramus</i> .....                         | 47, 97                                              |
| <i>cincinnatiensis</i> .....         | 79                          | <i>Actinoceras</i> .....                           | 27                                                  |
| <i>erosotus</i> .....                | 79                          | <i>Actinocrinidae</i> .....                        | 53, 81                                              |
| <i>humata</i> .....                  | 57                          | <i>Actinocrinites</i> .....                        | 81, 87                                              |
| <i>parvula</i> .....                 | <b>186</b>                  | <i>delicatus</i> .....                             | 81                                                  |
| <i>Acila</i> .....                   | 98                          | <i>longus</i> .....                                | 81                                                  |
| <i>Aclis</i> .....                   | 74, 86, 152                 | <i>penicillus</i> .....                            | 81                                                  |
| <i>robusta</i> .....                 | 86                          | <i>sculptilis</i> .....                            | 87                                                  |
| ? <i>stevensoni</i> .....            | <b>152</b>                  | <i>sculptus</i> .....                              | 81                                                  |
| <i>swallowiana</i> .....             | 74                          | <i>Actinocrinus</i> .....                          | 23, 26, 37, 38, 41, 42, 59, 118, 127, 130, 149, 165 |
| <i>Acmæa occidentalis</i> .....      | 102                         | ( <i>Alloprosallocrinus</i> ) <i>eucanus</i> ..... | <b>38</b>                                           |
| <i>papillata</i> .....               | 102                         | ( <i>Amphoracrinus</i> ?) <i>concavus</i> .....    | <b>26</b>                                           |
| <i>parva</i> .....                   | 102                         | <i>subturbidatus</i> .....                         | <b>23</b>                                           |
| <i>Acmæidae</i> .....                | 102                         | <i>araneolus</i> .....                             | <b>23</b>                                           |
| <i>Acclis</i> .....                  | 35                          | <i>asteriscus</i> .....                            | <b>23</b>                                           |
| <i>Acrochordiceras</i> .....         | <b>110</b> , <b>239</b>     | ( <i>Batocrinus</i> ) <i>asteriscus</i> .....      | 42                                                  |
| <i>hyatti</i> .....                  | <b>110</b> , <b>239</b>     | <i>dodecadactylus</i> .....                        | 42                                                  |
| <i>Acroloxus</i> .....               | 106, 161                    | <i>pistilliformis</i> .....                        | 41                                                  |
| <i>minutus</i> .....                 | 106, 161, 169               | <i>pistillus</i> .....                             | 59                                                  |
| <i>Acrothale</i> .....               | 189, 198                    | <i>calyculus</i> var. <i>paridensis</i> .....      | 40                                                  |
| ? <i>dichotoma</i> .....             | <b>189</b>                  | <i>concinus</i> .....                              | 42                                                  |
| <i>matthewi</i> .....                | 198                         | <i>delicatus</i> .....                             | 87                                                  |
| <i>Acrotreta</i> .....               | 126, 129, 189               | <i>dodecadactylus</i> .....                        | <b>26</b>                                           |
| <i>gemma</i> .....                   | 189                         | <i>evansii</i> .....                               | <b>249</b>                                          |
| <i>pyxidicula</i> .....              | <b>126</b> , 129            | <i>nashvillæ</i> var. <i>subtractus</i> .....      | 118                                                 |
| <i>subsida</i> .....                 | <b>126</b> , 129            | <i>pistillus</i> .....                             | <b>37</b>                                           |
| <i>Actæon</i> .....                  | 94, 101, 142                | ( <i>Pradocrinus</i> ?) <i>amplus</i> .....        | <b>26</b>                                           |
| <i>attenuatus</i> .....              | 101                         | <i>pyriformis</i> var. <i>rudis</i> .....          | 26                                                  |
| <i>concinus</i> .....                | <b>13</b>                   | <i>quadriscipinus</i> .....                        | <b>118</b>                                          |
| <i>ellipticus</i> .....              | 50                          |                                                    |                                                     |
| <i>impressa</i> .....                | <b>220</b>                  |                                                    |                                                     |



|                                                                 | Page.                                            |                                                   | Page.                                                             |
|-----------------------------------------------------------------|--------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------------|
| <i>Actinocrinus</i> ( <i>Saccocrinus</i> ?) <i>amplus</i> ..... | 50                                               | <i>Alasmodonta</i> .....                          | 98                                                                |
| <i>scitulus</i> .....                                           | 23, 42                                           | <i>Alcyonaria</i> .....                           | 96                                                                |
| <i>sillmani</i> .....                                           | 26, 42                                           | <i>Alectryonia</i> .....                          | 97, 126, 151, 158                                                 |
| <i>speciosus</i> .....                                          | 23                                               | <i>Alethopteris whitneyi</i> .....                | 246                                                               |
| ( <i>Sphærocrinus</i> ) <i>concavus</i> .....                   | 37                                               | <i>Alipes</i> .....                               | 102                                                               |
| <i>unicornicus</i> .....                                        | 249, 251                                         | <i>Alloposalloocrinus</i> .....                   | 32, 54                                                            |
| <i>validus</i> .....                                            | 23                                               | <i>Allorisma</i> .....                            | 32, 45, 61, 73, 85, 89, 90, 132, 133, 147, 149                    |
| <i>viaticus</i> .....                                           | 127, 130                                         |                                                   | 163, 165, 173, 245                                                |
| <i>wachsmuthi</i> .....                                         | 118, 149, 165                                    | ? <i>altirostrata</i> .....                       | 19, 20                                                            |
| <i>Actinopteria</i> .....                                       | 194                                              | <i>audax</i> .....                                | 223                                                               |
| <i>boydi</i> .....                                              | 194                                              | <i>capax</i> .....                                | 245                                                               |
| <i>Actinozoa</i> .....                                          | 129, 130, 131, 136, 138, 144, 147, 158, 163, 192 | ( <i>Cercomyopsis</i> ) <i>pleuropistha</i> ..... | 29                                                                |
| <i>Adelophthalmus mazonensis</i> ? .....                        | 53                                               | ( <i>Chænomya</i> ) <i>hybrida</i> .....          | 61                                                                |
| <i>Admeto</i> ( <i>Admetopsis</i> ) <i>gregaria</i> .....       | 134                                              | ? <i>cooperi</i> .....                            | 19, 20                                                            |
| ? <i>gregaria</i> .....                                         | 76                                               | <i>costata</i> .....                              | 86, 90                                                            |
| ? <i>subfusiformis</i> .....                                    | 76                                               | <i>elegans</i> .....                              | 51, 52                                                            |
| ? <i>rhomboides</i> .....                                       | 76                                               | <i>geinitzi</i> .....                             | 86                                                                |
| <i>Admetidae</i> .....                                          | 135                                              | ? <i>gilberti</i> .....                           | 147, 163                                                          |
| <i>Admetopsis</i> .....                                         | 134, 144                                         | ? <i>leavenworthensis</i> .....                   | 19, 20                                                            |
| <i>rhomboides</i> .....                                         | 144                                              | <i>marionensis</i> .....                          | 138, 165                                                          |
| <i>subfusiformis</i> .....                                      | 144                                              | <i>nucula arata</i> .....                         | 232                                                               |
| <i>Ænona</i> .....                                              | 269                                              | ( <i>Sedgwickia</i> ) <i>geinitzi</i> .....       | 73                                                                |
| <i>eufaulensis</i> .....                                        | 269                                              | <i>granosa</i> .....                              | 73                                                                |
| <i>papyria</i> .....                                            | 269                                              | <i>pleuropistha</i> .....                         | 66                                                                |
| <i>Æora</i> .....                                               | 269                                              | <i>reflexa</i> .....                              | 73                                                                |
| <i>cretacea</i> .....                                           | 269                                              | <i>subelegans</i> .....                           | 73                                                                |
| <i>Aganides</i> .....                                           | 104                                              | <i>subcuneata</i> .....                           | 19, 20, 32, 73, 149, 178                                          |
| <i>Agaricoocrinus</i> .....                                     | 26, 82, 83, 154                                  | <i>var.</i> .....                                 | 132                                                               |
| <i>gracilis</i> .....                                           | 26                                               | <i>terminalis</i> .....                           | 232                                                               |
| <i>nodosus</i> .....                                            | 82                                               | <i>ventricosa</i> .....                           | 67, 69                                                            |
| <i>springeri</i> .....                                          | 154                                              | <i>winchelli</i> .....                            | 67, 69                                                            |
| <i>whitfieldi</i> .....                                         | 83                                               | <i>Alveolites</i> .....                           | 62, 108, 156                                                      |
| <i>Agaronia punctulifera</i> .....                              | 222                                              | <i>goldfussi</i> .....                            | 156                                                               |
| <i>Agasatrocritus</i> .....                                     | 85, 87, 249, 251                                 | <i>multilamella</i> .....                         | 108                                                               |
| <i>carbonaria</i> .....                                         | 85                                               | <i>rockfordensis</i> .....                        | 132                                                               |
| <i>chesterensis</i> .....                                       | 85                                               | <i>vallorum</i> .....                             | 62                                                                |
| <i>conicus</i> .....                                            | 85, 249, 251                                     | <i>Amauropsis</i> .....                           | 102, 264                                                          |
| <i>dactyliiformis</i> .....                                     | 255                                              | <i>paludineformis</i> .....                       | 102, 264                                                          |
| <i>gibbosus</i> .....                                           | 85                                               | <i>Amboculia</i> .....                            | 31, 119                                                           |
| <i>pentagonus</i> .....                                         | 85                                               | ( <i>Spirifer</i> ?) <i>minuta</i> .....          | 119                                                               |
| <i>Agelacrinites</i> .....                                      | 54, 78, 83                                       | <i>Ambonicardia</i> .....                         | 266                                                               |
| ( <i>Lepidodiscus</i> ) <i>cinnamomensis</i> .....              | 78                                               | <i>cookii</i> .....                               | 266                                                               |
| <i>squamosus</i> .....                                          | 54, 83                                           | <i>Ambonychia</i> .....                           | 55, 56, 79                                                        |
| <i>pilosa</i> .....                                             | 78                                               | <i>acutirostris</i> .....                         | 56                                                                |
| <i>vorticellata</i> .....                                       | 78                                               | <i>carinata</i> .....                             | 232                                                               |
| <i>Agnostus</i> .....                                           | 126, 128, 189, 198, 234                          | <i>costata</i> .....                              | 79                                                                |
| <i>acadicus</i> .....                                           | 198                                              | <i>intermedia</i> .....                           | 55                                                                |
| <i>hidens</i> .....                                             | 189                                              | ( <i>Megaptera</i> ) <i>alata</i> .....           | 68, 79                                                            |
| <i>communis</i> .....                                           | 189, 234                                         | <i>casci</i> .....                                | 41, 79, 148                                                       |
| <i>interstriata</i> .....                                       | 126, 129                                         | <i>Ammonites</i> .....                            | 28, 35, 93, 104, 135, 208, 209, 210, 212, 227, 245, 253, 255, 263 |
| <i>neon</i> .....                                               | 189, 234                                         | <i>acuto-carinatus</i> .....                      | 255                                                               |
| <i>prolongus</i> .....                                          | 189, 234                                         | <i>belknapii</i> .....                            | 243                                                               |
| <i>richmondensis</i> .....                                      | 189                                              | <i>cheyennensis</i> .....                         | 250                                                               |
| <i>seclusus</i> .....                                           | 189                                              | <i>complexus</i> .....                            | 14, 104                                                           |
| <i>imidosus</i> .....                                           | 234                                              | <i>var. succaensis</i> .....                      | 27, 93                                                            |
| <i>Agrostos</i> .....                                           | 31, 190, 199                                     | <i>cordiformis</i> .....                          | 19, 35, 263                                                       |
| <i>Agrostos</i> .....                                           | 31                                               | <i>var. distans</i> .....                         | 263                                                               |
| <i>Agrostos</i> ? <i>globosus</i> .....                         | 190                                              | <i>galpini</i> .....                              | 256                                                               |
| ? <i>owenii</i> .....                                           | 31                                               | <i>geniculatus</i> .....                          | 219                                                               |
| <i>quadrangularis</i> .....                                     | 190                                              | <i>gibbonianus</i> .....                          | 243                                                               |
| <i>Alora</i> .....                                              | 263, 264                                         | <i>graysonensis</i> .....                         | 159                                                               |
| <i>glauco-oryza</i> .....                                       | 261, 264                                         | <i>halli</i> .....                                | 15                                                                |
| <i>Alaba</i> .....                                              | 102                                              | <i>henryi</i> .....                               | 19, 25                                                            |
|                                                                 |                                                  | <i>lævianus</i> .....                             | 135                                                               |



|                                                  | Page.                   |                                                    | Page.                                              |
|--------------------------------------------------|-------------------------|----------------------------------------------------|----------------------------------------------------|
| <i>Ammonites lenticularis</i> .....              | 250                     | <i>Anatina claibornensis</i> .....                 | 220                                                |
| <i>leonensis</i> .....                           | <b>219</b>              | <i>Anatinidae</i> .....                            | 30, 32, 34, 100, 109, 111, 134, 261, 262, 264, 271 |
| <i>libanensis</i> .....                          | <b>210</b>              | <i>Anchura</i> .....                               | 94, 102, 111, 127, 134, 137, 143, 264              |
| <i>marciana</i> .....                            | <b>255</b>              | <i>biangulata</i> .....                            | 48                                                 |
| <i>moreauensis</i> .....                         | <b>250</b>              | ( <i>Drepanoch[e]ilus</i> ) <i>americana</i> ..... | 48, 102                                            |
| <i>mullananus</i> .....                          | <b>29</b>               | <i>decemlirata</i> .....                           | 48                                                 |
| <i>mullananus</i> .....                          | 107                     | <i>mudgeana</i> .....                              | <b>143</b>                                         |
| <i>nebrascensis</i> .....                        | <b>250</b>              | <i>nebrascensis</i> .....                          | 48, 102, 264                                       |
| <i>newberryanus</i> .....                        | 17, 93                  | <i>prolabiata</i> .....                            | 143                                                |
| <i>novi-mexicana</i> .....                       | <b>243</b>              | <i>rostrata</i> .....                              | 48                                                 |
| <i>opalus</i> .....                              | <b>250</b>              | <i>ruida</i> .....                                 | 143                                                |
| <i>peracultus</i> .....                          | 274                     | <i>fusiformis</i> .....                            | <b>111</b> , 134                                   |
| <i>percarinatus</i> .....                        | <b>14</b> , 245         | <i>haydeni</i> .....                               | <b>143</b>                                         |
| <i>peruvianus</i> .....                          | 243                     | <i>newberryi</i> .....                             | <b>94</b>                                          |
| <i>pickeringi</i> .....                          | 227                     | <i>nuptialis</i> .....                             | 125, <b>127</b>                                    |
| <i>placenta</i> , var. <i>intercalaris</i> ..... | 21                      | <i>parva</i> .....                                 | 48, 102                                            |
| <i>dekayi</i> , var. <i>intercalaris</i> .....   | 135                     | <i>prolabiata</i> .....                            | <b>137</b>                                         |
| <i>pleurisepta</i> .....                         | <b>219</b>              | <i>ruida</i> .....                                 | <b>137</b>                                         |
| <i>safedensis</i> .....                          | <b>209</b>              | <i>sublevis</i> .....                              | 48, 102, 264                                       |
| ( <i>Scaphites</i> )? <i>ramosus</i> .....       | <b>17</b>               | <i>Ancillaria elongata</i> .....                   | 222                                                |
| <i>seprato-carinatus</i> .....                   | <b>66</b>               | <i>Ancillopsis altile</i> .....                    | 222                                                |
| <i>shumardi</i> .....                            | <b>243</b>              | <i>Ancylidae</i> .....                             | 106                                                |
| <i>swallowii</i> .....                           | 159                     | <i>Ancylloceras</i> .....                          | 104, 209, 261, 265                                 |
| <i>syriacus</i> .....                            | <b>208</b>              | <i>annulatum</i> .....                             | 159                                                |
| <i>texanus</i> .....                             | 219                     | <i>feheyensis</i> .....                            | <b>15</b>                                          |
| <i>vanconverensis</i> .....                      | <b>27</b>               | ( <i>Hamites</i> ) <i>uncus</i> .....              | <b>19</b>                                          |
| <i>vermillionensis</i> .....                     | <b>21</b>               | <i>jenneyi</i> .....                               | <b>261</b> , 265                                   |
| <i>vespertinus</i> .....                         | <b>255</b>              | <i>nebrascensis</i> .....                          | <b>15</b>                                          |
| <i>Ammonitidae</i> .....                         | 35, 104, 135, 263, 265  | <i>nicolletii</i> .....                            | <b>14</b>                                          |
| <i>Amorphozoa</i> .....                          | 41                      | <i>safedensis</i> .....                            | <b>209</b>                                         |
| <i>Ampelita</i> .....                            | 107                     | <i>tricostatus</i> .....                           | <b>261</b> , 265                                   |
| <i>Amphicelia</i> .....                          | 56                      | <i>uncum</i> .....                                 | 104                                                |
| <i>neglecta</i> .....                            | 56                      | <i>Ancyloceratidae</i> .....                       | 104                                                |
| <i>Amphidiscus armaeus</i> .....                 | 229                     | <i>Ancylus</i> .....                               | 112                                                |
| <i>Amphion</i> .....                             | 191                     | <i>undulatus</i> .....                             | <b>65</b> , 112, 160, 170                          |
| <i>nevadensis</i> .....                          | <b>191</b>              | <i>Angulus</i> .....                               | 100                                                |
| <i>Amphistegina</i> .....                        | 120                     | <i>Animalia</i> .....                              | 129                                                |
| <i>Amphora libyca</i> .....                      | 229                     | <i>Anisomyon</i> .....                             | <b>20</b> , 102, 112, 134, 143, 264                |
| <i>Amphoraerinus</i> .....                       | 42, 54, 82              | <i>alveolus</i> .....                              | 21, 102, 264                                       |
| <i>divergens</i> .....                           | 54, 82                  | <i>borealis</i> .....                              | 21, 102, 134, 264                                  |
| ? <i>spinobranchiata</i> .....                   | 82                      | <i>centrale</i> .....                              | <b>70</b> , 134, 143                               |
| <i>subturbinatus</i> .....                       | 42                      | <i>inequicostatus</i> .....                        | 48                                                 |
| <i>Amplexus</i> .....                            | 121, 136, 155, 163, 223 | <i>patelliformis</i> .....                         | 20, 21, 102, 264                                   |
| <i>coralloides</i> ? .....                       | 243                     | <i>sexsulcatus</i> .....                           | 21, 102, 112                                       |
| <i>fragilis</i> .....                            | <b>121</b>              | <i>shumardi</i> .....                              | 102                                                |
| <i>yandelli</i> .....                            | 156                     | <i>subovatus</i> .....                             | 21, 102, 264                                       |
| <i>zaphrentiformis</i> .....                     | <b>136</b> , 160        | <i>Anisopoda</i> .....                             | 46                                                 |
| <i>Ampullaria</i> .....                          | 197                     | <i>Anisorhynchus</i> .....                         | 101                                                |
| <i>powelli</i> .....                             | 180, <b>188</b> , 197   | <i>Anisothyris</i> .....                           | 101                                                |
| <i>Ampullina alveata</i> .....                   | 221                     | <i>Anisus</i> .....                                | 34, 106, 108                                       |
| <i>Amusium</i> .....                             | 266                     | <i>Annularia</i> .....                             | 149                                                |
| <i>conradi</i> .....                             | <b>266</b>              | <i>longifolia</i> .....                            | 149                                                |
| <i>simplicum</i> .....                           | 266                     | <i>Annulata</i> .....                              | 35                                                 |
| <i>Amussium</i> .....                            | 35                      | <i>Anodonta</i> .....                              | 140, 160, 273                                      |
| <i>aurarium</i> .....                            | <b>35</b>               | ? <i>angustata</i> .....                           | 167                                                |
| <i>propatulum</i> .....                          | 49                      | ? <i>cattskillensis</i> .....                      | 167                                                |
| <i>Anadara</i> ? <i>canalis</i> .....            | 50                      | <i>corpulentoides</i> .....                        | 273                                                |
| ? <i>congesta</i> .....                          | 50                      | <i>decurtata</i> .....                             | 170                                                |
| <i>incile</i> .....                              | 50                      | <i>grandoides</i> .....                            | 273                                                |
| <i>microdonta</i> .....                          | 50                      | <i>parallela</i> .....                             | <b>140</b> , 160, 168                              |
| <i>protracta</i> .....                           | 50                      | <i>propatoris</i> .....                            | <b>139</b> , 160, 168                              |
| <i>trigintinaria</i> .....                       | 50                      | <i>Anodontopsis</i> .....                          | 79, 194                                            |
| <i>trilineata</i> .....                          | 50                      | <i>amygdaleformis</i> .....                        | <b>194</b>                                         |
| <i>Anarthrocanna australis</i> .....             | <b>227</b>              |                                                    |                                                    |

|                                                               | Page.                                                          |                                             | Page.                                              |
|---------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------|----------------------------------------------------|
| <i>Anedontopsis</i> ? <i>milleri</i> .....                    | 66, 79                                                         | <i>Arca</i> <i>congesta</i> .....           | 50, 215, 216                                       |
| ( <i>Mediolopsis</i> ?) <i>unionoides</i> .....               | 79                                                             | ( <i>Cucullæa</i> ) <i>cordata</i> .....    | 15                                                 |
| <i>Anolax</i> <i>gigantea</i> .....                           | 222                                                            | <i>equilateralis</i> .....                  | 17                                                 |
| <i>pilcata</i> .....                                          | 222                                                            | <i>inornata</i> .....                       | 18, 180                                            |
| <i>Anomalocardia</i> <i>trigintinaria</i> .....               | 50                                                             | <i>shumardi</i> .....                       | 15                                                 |
| <i>Anomalocerinus</i> .....                                   | 37, 55, 77                                                     | <i>cuneus</i> .....                         | 209                                                |
| <i>incurvus</i> .....                                         | 77                                                             | <i>declivis</i> .....                       | 207                                                |
| <i>Anomalozyatites</i> .....                                  | 77                                                             | <i>devincta</i> .....                       | 206                                                |
| ( <i>Ateleocystites</i> ) <i>balan-</i><br><i>oides</i> ..... | 69, 77                                                         | <i>equilateralis</i> .....                  | 92                                                 |
| <i>Anomia</i> .....                                           | 93, 95, 97, 158, 160, 211, 213, 219, 266                       | <i>fabiformis</i> .....                     | 208                                                |
| <i>argentina</i> .....                                        | 266                                                            | <i>incile</i> .....                         | 50                                                 |
| <i>concentrica</i> .....                                      | 22, 95                                                         | <i>indurata</i> .....                       | 207                                                |
| <i>gryphorhynchus</i> .....                                   | 74, 160, 168                                                   | <i>longa</i> .....                          | 209                                                |
| <i>micronema</i> .....                                        | 88, 160, 168                                                   | <i>microdonta</i> .....                     | 50, 211, 213                                       |
| <i>nitida</i> .....                                           | 93                                                             | <i>obispoana</i> .....                      | 217                                                |
| ? <i>obliqua</i> .....                                        | 21, 97                                                         | <i>orientalis</i> .....                     | 207                                                |
| ( <i>Placunopsis</i> ?) <i>gryphorhynchus</i> .....           | 77                                                             | <i>parallela</i> .....                      | 70                                                 |
| <i>propatoris</i> .....                                       | 158, 167                                                       | <i>protracta</i> .....                      | 50                                                 |
| <i>retiformis</i> .....                                       | 111                                                            | <i>quindecemradiata</i> .....               | 270                                                |
| <i>subcostata</i> .....                                       | 211, 213, 219                                                  | <i>rhomboidella</i> .....                   | 220                                                |
| <i>subtrigonalis</i> .....                                    | 21, 97                                                         | <i>shumardi</i> .....                       | 274                                                |
| <i>tellinoides</i> .....                                      | 266                                                            | <i>striata</i> .....                        | 51                                                 |
| <i>anomidae</i> .....                                         | 97, 111, 266                                                   | <i>subelongata</i> .....                    | 218                                                |
| <i>Anomocare</i> .....                                        | 190                                                            | <i>subrotundata</i> .....                   | 207                                                |
| ? <i>parvum</i> .....                                         | 190                                                            | <i>sulcatina</i> .....                      | 256                                                |
| <i>Anomolacardia</i> <i>rhomboidella</i> .....                | 220                                                            | <i>syriaca</i> .....                        | 207                                                |
| <i>Anomphalus</i> .....                                       | 40, 87                                                         | <i>trilineata</i> .....                     | 50, 215, 216                                       |
| <i>rotulus</i> .....                                          | 40, 87                                                         | <i>vancouverensis</i> .....                 | 17                                                 |
| <i>Anthophyllum</i> <i>cuneiforme</i> .....                   | 220                                                            | <i>Arcadæ</i> .....                         | 28                                                 |
| <i>expansum</i> .....                                         | 247                                                            | <i>Arcætes</i> .....                        | 110, 146, 163, 239                                 |
| <i>Anthracopæa</i> .....                                      | 37, 46, 53                                                     | ? — ? .....                                 | 146, 163                                           |
| <i>typus</i> .....                                            | 37, 46                                                         | ? <i>cirratus</i> .....                     | 146, 163, 239                                      |
| <i>Anthracoptera</i> .....                                    | 61, 165                                                        | <i>gabbi</i> .....                          | 110, 239                                           |
| ? ? <i>fragilis</i> .....                                     | 41, 61                                                         | ? <i>perplanus</i> .....                    | 110, 239                                           |
| <i>polita</i> .....                                           | 165                                                            | <i>Arcætidæ</i> .....                       | 110, 239                                           |
| <i>Anthracopupa</i> <i>ohioensis</i> .....                    | 167                                                            | <i>Archæocaris</i> .....                    | 90                                                 |
| <i>Anthrapalemon</i> .....                                    | 37, 40, 61, 179                                                | <i>vermiformis</i> .....                    | 89                                                 |
| <i>gracilis</i> .....                                         | 37, 46, 61, 179                                                | <i>Archæocidaridæ</i> .....                 | 43                                                 |
| <i>Aphrodina</i> .....                                        | 100, 269                                                       | <i>Archæocidaris</i> .....                  | 23, 44, 72, 127, 131, 136, 150, 151, 163, 196, 245 |
| <i>tippiana</i> .....                                         | 269                                                            | — ? .....                                   | 19, 87                                             |
| <i>Aploceras</i> .....                                        | 27                                                             | <i>cratis</i> .....                         | 136, 160                                           |
| <i>Aporrhaidæ</i> .....                                       | 102, 111, 134, 264                                             | <i>dininnii</i> .....                       | 150, 163                                           |
| <i>Aporrhais</i> .....                                        | 102, 264                                                       | <i>gracilis</i> .....                       | 245                                                |
| <i>biangulata</i> .....                                       | 102                                                            | <i>longispinus</i> .....                    | 245                                                |
| <i>decmilrata</i> .....                                       | 48                                                             | <i>mucronata</i> .....                      | 23, 44                                             |
| ( <i>Gonlocheila</i> ) <i>castorensis</i> .....               | 261, 264                                                       | <i>ornatus</i> .....                        | 131, 245                                           |
| <i>moeki</i> .....                                            | 261, 264                                                       | <i>triplex</i> .....                        | 151                                                |
| <i>newberryi</i> .....                                        | 264                                                            | <i>triserrata</i> .....                     | 72                                                 |
| <i>parva</i> .....                                            | 21, 48                                                         | <i>trudifer</i> .....                       | 127, 131                                           |
| <i>sulcatus</i> .....                                         | 21, 48                                                         | <i>Archæocaris</i> <i>vermiformis</i> ..... | 68                                                 |
| <i>Antyche</i> .....                                          | 29                                                             | <i>Archimedes</i> .....                     | 147, 154, 248                                      |
| <i>Archaidæ</i> .....                                         | 61                                                             | <i>laxa</i> .....                           | 154                                                |
| <i>Archæophyllum</i> .....                                    | 223                                                            | <i>Archimedipora</i> .....                  | 94                                                 |
| <i>Archæus</i> .....                                          | 93, 107, 207, 208, 209, 211, 213, 215, 216, 217, 218, 267, 270 | — ? .....                                   | 94                                                 |
| <i>aculivis</i> .....                                         | 206, 274                                                       | <i>archimedes</i> .....                     | 255                                                |
| <i>alticostis</i> .....                                       | 267                                                            | <i>Architectonica</i> <i>abotti</i> .....   | 43                                                 |
| <i>banduensis</i> .....                                       | 209                                                            | <i>henrici</i> .....                        | 221                                                |
| <i>brevis</i> .....                                           | 207                                                            | <i>ornata</i> .....                         | 221                                                |
| <i>causalis</i> .....                                         | 50, 215, 216                                                   | <i>plana</i> .....                          | 221                                                |
| <i>carinata</i> .....                                         | 20                                                             | <i>pseudogrannulata</i> .....               | 221                                                |
| <i>costellensis</i> .....                                     | 137                                                            | <i>Arcidæ</i> .....                         | 33, 98, 111, 134, 262, 263, 267, 270               |
|                                                               |                                                                | <i>Arcinæ</i> .....                         | 33                                                 |
|                                                               |                                                                | <i>Arcopagella</i> .....                    | 70, 100                                            |
|                                                               |                                                                | ? <i>macrodonta</i> .....                   | 100                                                |



|                                                 | Page.                                                                                                                |                                 | Page.                                                                 |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------------------------------------------------------|
| <i>cupagella mactroides</i> .....               | 70, 100                                                                                                              | <i>Astartella garleyi</i> ..... | 144, 165                                                              |
| <i>cupagia</i> .....                            | 215, 216, 217, 218                                                                                                   | <i>newberryi</i> .....          | 90                                                                    |
| <i>medialis</i> .....                           | 215, 216                                                                                                             | <i>varica</i> .....             | 90                                                                    |
| <i>texana</i> .....                             | 218                                                                                                                  | <i>astartidae</i> .....         | 266, 268, 270, 271                                                    |
| <i>unda</i> .....                               | 217                                                                                                                  | <i>Astartila</i> .....          | 224, 225                                                              |
| <i>micolites?</i> .....                         | 261                                                                                                                  | <i>corpulenta</i> .....         | 225                                                                   |
| <i>sthusiana</i> .....                          | 190                                                                                                                  | <i>cyclas</i> .....             | 224, 225                                                              |
| <i>americana</i> .....                          | 190                                                                                                                  | <i>cyprina</i> .....            | 224, 225                                                              |
| <i>onellus</i> .....                            | 28, 186, 259                                                                                                         | <i>cytherea</i> .....           | 224, 225                                                              |
| ( <i>Crepicephalus</i> ) <i>oweni</i> .....     | 28                                                                                                                   | <i>intrepida</i> .....          | 224, 225                                                              |
| <i>pustulatus</i> .....                         | 186                                                                                                                  | <i>polita</i> .....             | 224, 225                                                              |
| <i>tripunctatus</i> .....                       | 259                                                                                                                  | <i>transversa</i> .....         | 224, 225                                                              |
| <i>rhoges</i> .....                             | 102                                                                                                                  | <i>Asteroidea</i> .....         | 26                                                                    |
| <i>sculata</i> .....                            | 31, 35, 46, 55, 56, 58, 59, 74, 79, 80, 81,<br>84, 91, 105, 108, 109, 135, 136,<br>138, 144, 153, 159, 165, 260, 261 | <i>Asterias</i> .....           | 260, 261                                                              |
| <i>phiscus</i> .....                            | 129                                                                                                                  | <i>dubium</i> .....             | 260, 261                                                              |
| <i>wheeleri</i> .....                           | 129                                                                                                                  | <i>Asterida</i> .....           | 24                                                                    |
| <i>phus</i> .....                               | 79, 91, 185, 186, 191, 248                                                                                           | <i>Asteroidea</i> .....         | 40, 44, 60, 61, 78, 260, 261                                          |
| <i>barrandi</i> .....                           | 232                                                                                                                  | <i>Astraeospongia</i> .....     | 58                                                                    |
| <i>caribonensis</i> .....                       | 191                                                                                                                  | <i>hamiltonensis</i> .....      | 41, 58                                                                |
| <i>curiosa</i> .....                            | 191                                                                                                                  | <i>Astrea fungiformis</i> ..... | 247                                                                   |
| <i>emoryi</i> .....                             | 233                                                                                                                  | <i>gigas</i> .....              | 247                                                                   |
| <i>homalonotoides</i> .....                     | 186                                                                                                                  | <i>mamillaris</i> .....         | 247                                                                   |
| ( <i>Isotelus</i> ) <i>lowenais</i> .....       | 250                                                                                                                  | <i>Astrodapsis</i> .....        | 215, 217                                                              |
| <i>megistos</i> .....                           | 79                                                                                                                   | <i>antiselli</i> .....          | 216, 217                                                              |
| <i>vigilans</i> .....                           | 65, 61                                                                                                               | <i>Astylospongia</i> .....      | 56, 192                                                               |
| ( <i>Megalaspis?</i> ) <i>goniocercus</i> ..... | 76                                                                                                                   | <i>carbonaria</i> .....         | 41                                                                    |
| <i>romingeri</i> .....                          | 185                                                                                                                  | <i>christiani</i> .....         | 56                                                                    |
| <i>wisconsinensis</i> .....                     | 185                                                                                                                  | <i>praemorsa</i> .....          | 91                                                                    |
| <i>phonida</i> .....                            | 266                                                                                                                  | <i>Athyris</i> .....            | 24, 43, 72, 85, 89, 92, 94, 109, 148, 173, 193,<br>196, 235, 245, 273 |
| <i>tarle</i> .....                              | 30, 34, 164, 207, 208, 209, 218, 236, 262,<br>263, 266, 271                                                          | <i>angelica</i> .....           | 193                                                                   |
| <i>arctata</i> .....                            | 207                                                                                                                  | <i>claytoni</i> .....           | 235                                                                   |
| <i>arenosa</i> .....                            | 236                                                                                                                  | <i>crassiscardinalis</i> .....  | 116                                                                   |
| <i>castanella</i> .....                         | 271                                                                                                                  | <i>hirsuta</i> .....            | 196                                                                   |
| <i>engonata</i> .....                           | 207                                                                                                                  | <i>lamellosa</i> .....          | 89                                                                    |
| <i>evansi</i> .....                             | 263                                                                                                                  | <i>parvirostra</i> .....        | 24                                                                    |
| <i>fragilis</i> .....                           | 22, 34, 262                                                                                                          | <i>peraiuata</i> .....          | 109                                                                   |
| <i>gemma</i> .....                              | 224, 225                                                                                                             | <i>planosulcata</i> .....       | 43, 235                                                               |
| <i>gibbosa</i> .....                            | 51                                                                                                                   | <i>roissyi</i> .....            | 109                                                                   |
| <i>gregaria</i> .....                           | 15                                                                                                                   | <i>subquadrata?</i> .....       | 235                                                                   |
| <i>inornata</i> .....                           | 22, 34                                                                                                               | <i>subtilita</i> .....          | 52, 72, 85, 92, 94, 109, 178, 245, 246                                |
| <i>lilinea</i> .....                            | 208                                                                                                                  | <i>vittata</i> .....            | 148                                                                   |
| <i>lucinoides</i> .....                         | 209                                                                                                                  | <i>Atlantida</i> .....          | 121                                                                   |
| <i>minutissima</i> .....                        | 220                                                                                                                  | <i>Atrypa</i> .....             | 58, 62, 94, 108, 148, 193, 247, 248                                   |
| <i>mortonensis</i> .....                        | 51                                                                                                                   | <i>aspera</i> .....             | 58, 62, 94                                                            |
| <i>mucronata</i> .....                          | 208                                                                                                                  | <i>comis</i> .....              | 250                                                                   |
| <i>nebrascensis</i> .....                       | 51                                                                                                                   | <i>desquamata</i> .....         | 193                                                                   |
| <i>orientalis</i> .....                         | 207                                                                                                                  | <i>limitaris?</i> .....         | 247                                                                   |
| <i>packardi</i> .....                           | 164, 180                                                                                                             | <i>lingulata</i> .....          | 273                                                                   |
| <i>parva</i> .....                              | 220                                                                                                                  | <i>orbicularis</i> .....        | 248                                                                   |
| <i>pervetus</i> .....                           | 207                                                                                                                  | <i>prisca</i> .....             | 247                                                                   |
| <i>planimarginata</i> .....                     | 271                                                                                                                  | <i>reticularis</i> .....        | 58, 62, 94, 108, 148, 193                                             |
| <i>subcordata</i> .....                         | 209                                                                                                                  | <i>Atrypa angustatus</i> .....  | 50                                                                    |
| <i>sublineolata</i> .....                       | 208                                                                                                                  | <i>orbiculata</i> .....         | 49                                                                    |
| <i>syriaca</i> .....                            | 207                                                                                                                  | <i>vanuxemi</i> .....           | 222                                                                   |
| <i>texana</i> .....                             | 218                                                                                                                  | <i>Aucella</i> .....            | 35, 176                                                               |
| <i>undulosa</i> .....                           | 208                                                                                                                  | <i>concentrica</i> var. .....   | 176                                                                   |
| <i>valliserianus</i> .....                      | 51                                                                                                                   | <i>erringtoni</i> .....         | 35                                                                    |
| <i>ventricosa</i> .....                         | 30                                                                                                                   | var. <i>linguliformis</i> ..... | 35                                                                    |
| <i>veta</i> .....                               | 266                                                                                                                  | <i>hausmanni</i> .....          | 51, 52                                                                |
| <i>washitensis</i> .....                        | 255                                                                                                                  | <i>Anlacomya</i> .....          | 98                                                                    |
| <i>tartella</i> .....                           | 90, 144, 165                                                                                                         | <i>Anulophyllum</i> .....       | 62                                                                    |
| <i>—?</i> .....                                 | 90                                                                                                                   | <i>richardsoni</i> .....        | 62                                                                    |
|                                                 |                                                                                                                      | <i>Anulopora serpens</i> .....  | 192, 247                                                              |

|                                         | Page.                                                                                                    |                                         | Page.                       |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------|-----------------------------|
| <i>Anulopora tubaeformis</i> .....      | 248                                                                                                      | <i>Aviculopecten idahoensis</i> .....   | 140, 182                    |
| <i>Anulosteges</i> .....                | 121                                                                                                      | <i>indianensis</i> .....                | 41, 61                      |
| <i>guadalupensis</i> .....              | 256                                                                                                      | <i>interlineatus</i> .....              | 24, 45, 132, 178            |
| <i>spondyliiformis</i> .....            | 120, 121                                                                                                 | <i>koninckii</i> .....                  | 24, 45                      |
| <i>Auriculide</i> .....                 | 112                                                                                                      | <i>limaformis</i> .....                 | 116                         |
| <i>Austrella rigida</i> .....           | 227                                                                                                      | <i>macoyi</i> .....                     | 32, 132                     |
| <i>Avalana subglobosa</i> .....         | 14, 29, 102                                                                                              | <i>neglectus</i> .....                  | 73, 86, 87                  |
| <i>Avicula</i> .....                    | 24, 73, 86, 136, 208, 262                                                                                | <i>nodocostatus</i> .....               | 116                         |
| — ? .....                               | 224, 274                                                                                                 | <i>oblongus</i> .....                   | 43                          |
| <i>abrupta</i> .....                    | 47                                                                                                       | <i>occidaneus</i> .....                 | 110                         |
| <i>annosa</i> .....                     | 271                                                                                                      | <i>occidentalis</i> .....               | 45, 73, 132, 178            |
| <i>convexo-plano</i> .....              | 47                                                                                                       | <i>oweni</i> .....                      | 24, 43                      |
| <i>cretacea</i> .....                   | 47                                                                                                       | <i>paralis</i> .....                    | 80                          |
| <i>corta</i> .....                      | 49                                                                                                       | <i>parvulus</i> .....                   | 236                         |
| <i>f. custa</i> .....                   | 232                                                                                                      | <i>pealei</i> .....                     | 146                         |
| <i>f. fibrosa</i> .....                 | 15                                                                                                       | <i>f. pealei</i> .....                  | 162                         |
| <i>haydeni</i> .....                    | 13, 47                                                                                                   | <i>pellucidus</i> .....                 | 24, 45                      |
| <i>iridescens</i> .....                 | 47                                                                                                       | <i>peroccidens</i> .....                | 196                         |
| <i>laripes</i> .....                    | 47                                                                                                       | <i>pintoensis</i> .....                 | 196                         |
| <i>linguiformis</i> .....               | 47                                                                                                       | <i>(Pseudomonotis) idahoensis</i> ..... | 71                          |
| <i>longa</i> .....                      | 73, 86                                                                                                   | <i>randolphensis</i> .....              | 41                          |
| <i>(Monotis) tenuicostata</i> .....     | 18                                                                                                       | <i>sanduskyensis</i> .....              | 67                          |
| <i>morganensis</i> .....                | 86                                                                                                       | <i>spinuliferus</i> .....               | 64                          |
| <i>multangula</i> .....                 | 50                                                                                                       | <i>(Streblopteria ?) hertzeri</i> ..... | 66, 90                      |
| <i>munsteri</i> .....                   | 49                                                                                                       | <i>superstrictus</i> .....              | 164                         |
| <i>nebrascana</i> .....                 | 47, 255                                                                                                  | <i>utahensis</i> .....                  | 94, 110                     |
| <i>oblonga</i> .....                    | 24                                                                                                       | <i>weberensis</i> .....                 | 235                         |
| <i>(Oxytoma) gastroses</i> .....        | 76                                                                                                       | <i>whitai</i> .....                     | 73                          |
| <i>mucronata</i> .....                  | 262                                                                                                      | <i>williamsi</i> .....                  | 68                          |
| <i>parkensis</i> .....                  | 136                                                                                                      | <i>winchelli</i> .....                  | 89                          |
| <i>pedernalis</i> .....                 | 47                                                                                                       | <i>Aviculo-pectininae</i> .....         | 32                          |
| <i>petrosa</i> .....                    | 47                                                                                                       | <i>Aviculopinna</i> .....               | 73                          |
| <i>pinnaeformis</i> .....               | 51                                                                                                       | <i>americana</i> .....                  | 52, 73, 90                  |
| <i>planisulca</i> .....                 | 47                                                                                                       | <i>pinnaeformis</i> .....               | 52                          |
| <i>(Pseudoptera) propleura</i> .....    | 76                                                                                                       | <i>Axinea</i> .....                     | 98, 102, 111, 160, 215, 216 |
| <i>rhytophora</i> .....                 | 76                                                                                                       | <i>barbarensis</i> .....                | 215, 216, 217               |
| <i>samariensis</i> .....                | 208                                                                                                      | <i>subimbricata</i> .....               | 98                          |
| <i>apeluncaria</i> .....                | 51                                                                                                       | <i>wyomingensis</i> .....               | 111                         |
| <i>subgibbosa</i> .....                 | 21, 47                                                                                                   | <i>Axinea</i> .....                     | 217, 267, 271               |
| <i>f. sulcata</i> .....                 | 73                                                                                                       | <i>alta</i> .....                       | 267                         |
| <i>triangularis</i> .....               | 47                                                                                                       | <i>conradi</i> .....                    | 271                         |
| <i>voigenensis ?</i> .....              | 226                                                                                                      | <i>holmesiana</i> .....                 | 160                         |
| <i>Aviculidae</i> .....                 | 29, 32, 262, 263, 267                                                                                    | <i>mortoni</i> .....                    | 267                         |
| <i>Aviculinae</i> .....                 | 29, 32                                                                                                   | <i>Axininae</i> .....                   | 34                          |
| <i>Aviculopecten</i> .....              | 24, 22, 43, 45, 61, 73, 80, 89, 90, 94,<br>110, 116, 119, 127, 132, 146,<br>162, 164, 178, 186, 235, 236 | <i>Axinus</i> .....                     | 258                         |
| — ? .....                               | 32                                                                                                       | <i>rotundatus</i> .....                 | 29                          |
| <i>affinis</i> .....                    | 196                                                                                                      | <i>(Schizodus) ovatus</i> .....         | 19, 20                      |
| <i>altus</i> .....                      | 146, 162                                                                                                 | <i>securis</i> .....                    | 258                         |
| <i>amplus</i> .....                     | 24, 32, 43                                                                                               | <i>Axophyllum</i> .....                 | 92, 121, 177                |
| <i>burlingtonensis</i> .....            | 24, 43                                                                                                   | <i>rudis</i> .....                      | 92, 121, 177                |
| <i>carbonarius</i> .....                | 87                                                                                                       | <i>Azthemis</i> .....                   | 217                         |
| <i>carboniferus</i> .....               | 73, 178                                                                                                  |                                         |                             |
| <i>catactus</i> .....                   | 110                                                                                                      |                                         |                             |
| <i>coreyana</i> .....                   | 127, 132                                                                                                 |                                         |                             |
| <i>coxanus</i> .....                    | 24, 45, 73                                                                                               |                                         |                             |
| <i>crenistriatus</i> .....              | 66, 89                                                                                                   |                                         |                             |
| <i>curto-cardinalis</i> .....           | 236                                                                                                      |                                         |                             |
| <i>(Eumicrotia ?) augustensis</i> ..... | 236                                                                                                      |                                         |                             |
| <i>eurekaensis</i> .....                | 196                                                                                                      |                                         |                             |
| <i>flabriatus</i> .....                 | 41                                                                                                       |                                         |                             |
| <i>grandocostus</i> .....               | 119                                                                                                      |                                         |                             |
| <i>hagueli</i> .....                    | 196                                                                                                      |                                         |                             |
| <i>hawaii</i> .....                     | 51                                                                                                       |                                         |                             |

## B.

|                                         |                           |
|-----------------------------------------|---------------------------|
| <i>Baculites</i> .....                  | 28, 93, 94, 103, 135, 209 |
| — ? .....                               | 209                       |
| <i>anceps</i> var. <i>obtusus</i> ..... | 94, 103                   |
| <i>asper</i> .....                      | 103                       |
| <i>baculus</i> .....                    | 28                        |
| <i>chicoensis</i> .....                 | 93                        |
| <i>compressus</i> .....                 | 14, 103                   |
| <i>grandis</i> .....                    | 14, 103                   |
| <i>inornatus</i> .....                  | 27                        |
| <i>occidentalis</i> .....               | 27, 83                    |
| <i>ovatus</i> .....                     | 14, 17, 103, 135          |
| <i>syriacus</i> .....                   | 209                       |



|                                         | Page.                        |                               | Page.                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------|------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Baculitidae .....                       | 103, 135                     | Bellerophon.....              | 24, 42, 46, 55, 74, 81, 117, 118, 126, 129, 132, 138, 147, 151, 154, 164, 178, 195, 197, 235, 245, 247, 248, 258                                                                                                                                                                                                                                          |
| Bailiella .....                         | <b>198</b>                   | allegoricus.....              | <b>126</b> , 129                                                                                                                                                                                                                                                                                                                                          |
| Bairdia ? .....                         | 257                          | bilabiatu.....                | <b>117</b>                                                                                                                                                                                                                                                                                                                                                |
| Bakevellia .....                        | 32, 132                      | bilobatus .....               | 248                                                                                                                                                                                                                                                                                                                                                       |
| parva .....                             | <b>19</b> , 20, 32, 132      | bowmani .....                 | <b>138</b>                                                                                                                                                                                                                                                                                                                                                |
| Balanus .....                           | 227                          | (Bucania) platyatoma.....     | <b>55</b>                                                                                                                                                                                                                                                                                                                                                 |
| estrellanus .....                       | <b>217</b>                   | carbonarius .....             | 74, 178                                                                                                                                                                                                                                                                                                                                                   |
| Barbatia .....                          | 98, 143, 158                 | combai .....                  | <b>195</b>                                                                                                                                                                                                                                                                                                                                                |
| barbulata .....                         | <b>158</b>                   | crassus.....                  | <b>24</b> , 46, 132, 178                                                                                                                                                                                                                                                                                                                                  |
| coalvillensis .....                     | 143                          | cyrtolites .....              | 42                                                                                                                                                                                                                                                                                                                                                        |
| (Polynema ?) parallela.....             | 98                           | gibsoni .....                 | <b>154</b>                                                                                                                                                                                                                                                                                                                                                |
| Bariosta .....                          | 105                          | inspeciosus .....             | <b>151</b>                                                                                                                                                                                                                                                                                                                                                |
| Baroda subelliptica.....                | <b>143</b>                   | interlineatus.....            | 51                                                                                                                                                                                                                                                                                                                                                        |
| wyomingensis .....                      | 143                          | leda .....                    | 195                                                                                                                                                                                                                                                                                                                                                       |
| Barrandia .....                         | 191                          | lyra .....                    | 195                                                                                                                                                                                                                                                                                                                                                       |
| ? .....                                 | 191                          | mæra .....                    | 195                                                                                                                                                                                                                                                                                                                                                       |
| mecoysi.....                            | <b>191</b>                   | majusculus .....              | <b>197</b>                                                                                                                                                                                                                                                                                                                                                |
| Barycrinus .....                        | <b>54</b> , 83, 84           | marcouanus .....              | 51                                                                                                                                                                                                                                                                                                                                                        |
| geometricus .....                       | 83                           | marconianus .....             | 74                                                                                                                                                                                                                                                                                                                                                        |
| hoveyi.....                             | 83                           | micromphalus .....            | 226                                                                                                                                                                                                                                                                                                                                                       |
| var. herculeus.....                     | 54, 83                       | montfortianus .....           | 74                                                                                                                                                                                                                                                                                                                                                        |
| magnificus .....                        | <b>54</b> , 83               | neleus .....                  | <b>235</b>                                                                                                                                                                                                                                                                                                                                                |
| mammatus .....                          | 83                           | newberryi .....               | <b>67</b> , 81                                                                                                                                                                                                                                                                                                                                            |
| pentagonus .....                        | 83                           | nodocarinatus .....           | 178                                                                                                                                                                                                                                                                                                                                                       |
| spectabilis .....                       | <b>64</b> , 84               | panneus .....                 | <b>118</b>                                                                                                                                                                                                                                                                                                                                                |
| subtumidus .....                        | 83                           | patulus .....                 | 81                                                                                                                                                                                                                                                                                                                                                        |
| Baraphyllum .....                       | 57, 144                      | pelops .....                  | 195                                                                                                                                                                                                                                                                                                                                                       |
| ? arenarium.....                        | 58                           | percarinatus.....             | 74, 178                                                                                                                                                                                                                                                                                                                                                   |
| fungus.....                             | <b>144</b>                   | perelegans.....               | <b>117</b>                                                                                                                                                                                                                                                                                                                                                |
| Basommatophora.....                     | 135                          | perplexa.....                 | <b>195</b>                                                                                                                                                                                                                                                                                                                                                |
| Bathyomphalus .....                     | 34, 106, 137, 161            | propinquus .....              | <b>67</b> , 81                                                                                                                                                                                                                                                                                                                                            |
| Bathynrellus (Asaphiscus) bradleyi..... | <b>76</b>                    | scriptiferus.....             | <b>118</b>                                                                                                                                                                                                                                                                                                                                                |
| Bathyurus .....                         | 185, 191, 234                | strictus .....                | <b>223</b> , 226                                                                                                                                                                                                                                                                                                                                          |
| armatus.....                            | 186                          | sublævis .....                | 154                                                                                                                                                                                                                                                                                                                                                       |
| ? congeneris.....                       | <b>191</b>                   | subpapillosus.....            | 147, 164                                                                                                                                                                                                                                                                                                                                                  |
| ? haydeni .....                         | <b>76</b>                    | textilis .....                | 197                                                                                                                                                                                                                                                                                                                                                       |
| longispinus .....                       | <b>185</b>                   | undulatus .....               | <b>223</b> , 226                                                                                                                                                                                                                                                                                                                                          |
| pogonipensis.....                       | <b>234</b>                   | vinculatus .....              | <b>117</b>                                                                                                                                                                                                                                                                                                                                                |
| serratus .....                          | <b>76</b>                    | Bellerophonitidae .....       | 39, 132                                                                                                                                                                                                                                                                                                                                                   |
| ? similinus .....                       | <b>191</b>                   | Bellinurus.....               | 36, 46                                                                                                                                                                                                                                                                                                                                                    |
| ? tuberculatus.....                     | <b>191</b>                   | danæ.....                     | <b>36</b> , 46                                                                                                                                                                                                                                                                                                                                            |
| Batocrinus .....                        | 42, 54, 81                   | Beyrichia.....                | 121, 188, 191, 195                                                                                                                                                                                                                                                                                                                                        |
| cassedayanus .....                      | <b>54</b> , 81               | bella.....                    | <b>188</b>                                                                                                                                                                                                                                                                                                                                                |
| christyi.....                           | 81                           | cincinnatiensis.....          | 187                                                                                                                                                                                                                                                                                                                                                       |
| (Eretmocrinus) neglectus .....          | <b>54</b> , 81               | fætoidea.....                 | <b>121</b>                                                                                                                                                                                                                                                                                                                                                |
| remibrachiatus .....                    | 81                           | lithofactor.....              | <b>120</b>                                                                                                                                                                                                                                                                                                                                                |
| pyriformis .....                        | 81, 87                       | var. velata .....             | 120                                                                                                                                                                                                                                                                                                                                                       |
| quasilus.....                           | <b>54</b> , 81               | petrifacto.....               | <b>121</b>                                                                                                                                                                                                                                                                                                                                                |
| trochiscus .....                        | <b>54</b> , 81               | var. velata .....             | 121                                                                                                                                                                                                                                                                                                                                                       |
| verneuillianus .....                    | 82                           | (Primitia) occidentalis ..... | <b>195</b>                                                                                                                                                                                                                                                                                                                                                |
| Beaumontia .....                        | 147, 158                     | Blastoidea .....              | 26, 44, 126                                                                                                                                                                                                                                                                                                                                               |
| ? solitaria .....                       | <b>147</b> , 158             | Brachiopoda.....              | 20, 22, 24, 26, 27, 30, 31, 33, 41, 43, 44, 45, 55, 56, 57, 58, 59, 60, 61, 62, 64, 68, 72, 78, 80, 85, 89, 90, 91, 92, 94, 96, 98, 108, 109, 110, 116, 118, 121, 126, 127, 129, 130, 131, 133, 138, 146, 147, 148, 149, 151, 154, 155, 162, 163, 165, 177, 189, 190, 192, 196, 225, 232, 233, 234, 235, 236, 250, 253, 255, 257, 260, 261, 262, 265, 274 |
| Belemnitella .....                      | 105                          | Brachydontes .....            | 140, 158, 160                                                                                                                                                                                                                                                                                                                                             |
| ? bulbosa .....                         | <b>15</b> , 105              | Brachyspira .....             | 159                                                                                                                                                                                                                                                                                                                                                       |
| paxillosa .....                         | 49                           | Breviarca .....               | 98, 267                                                                                                                                                                                                                                                                                                                                                   |
| Belemnites .....                        | 31, 35, 95, 111, 176, 263    |                               |                                                                                                                                                                                                                                                                                                                                                           |
| densus .....                            | <b>19</b> , 35, 95, 179, 263 |                               |                                                                                                                                                                                                                                                                                                                                                           |
| macritatis .....                        | <b>176</b>                   |                               |                                                                                                                                                                                                                                                                                                                                                           |
| nevadensis.....                         | <b>111</b>                   |                               |                                                                                                                                                                                                                                                                                                                                                           |
| pacificus .....                         | 35                           |                               |                                                                                                                                                                                                                                                                                                                                                           |
| paxillosa .....                         | 49                           |                               |                                                                                                                                                                                                                                                                                                                                                           |
| Belemnitidae.....                       | 31, 35, 105, 111, 263        |                               |                                                                                                                                                                                                                                                                                                                                                           |
| Belemnoerinus .....                     | 59, <b>118</b> , 120         |                               |                                                                                                                                                                                                                                                                                                                                                           |
| typus .....                             | <b>118</b>                   |                               |                                                                                                                                                                                                                                                                                                                                                           |
| whitii .....                            | <b>40</b> , 59               |                               |                                                                                                                                                                                                                                                                                                                                                           |

|                                           | Page.                       |                                                 | Page.                               |
|-------------------------------------------|-----------------------------|-------------------------------------------------|-------------------------------------|
| <i>Breviarca saffordi</i> .....           | 267                         | <i>Callista delawarensis</i> .....              | 269                                 |
| <i>Bryozoa</i> .....                      | 19, 154, 253, 255, 257, 274 | <i>deweyi</i> .....                             | 28                                  |
| <i>Bucanella nana</i> .....               | 66                          | ( <i>Dosiniopsis</i> ) <i>deweyi</i> .....      | 100                                 |
| <i>Bucardina</i> .....                    | 34                          | <i>nebrascensis</i> .....                       | 100                                 |
| <i>Buccinidae</i> .....                   | 103                         | <i>orbiculata</i> .....                         | 100                                 |
| <i>Buccinofusus diegoensis</i> .....      | 222                         | <i>owenana</i> .....                            | 100                                 |
| <i>Buconopsis</i> .....                   | 219                         | <i>eufalensis</i> .....                         | 48                                  |
| <i>parryi</i> .....                       | 219                         | <i>pellucida</i> .....                          | 100                                 |
| <i>Buccinum</i> .....                     | 205                         | <i>Calloarca</i> .....                          | 83                                  |
| <i>devinetam</i> .....                    | 206                         | <i>Callonema</i> .....                          | 195                                 |
| <i>integrum</i> .....                     | 205                         | <i>occidentalis</i> .....                       | 195                                 |
| <i>nebrascensis</i> .....                 | 14                          | <i>Calobates</i> .....                          | 101                                 |
| <i>sowerbii</i> .....                     | 221                         | <i>Calophyllum</i> .....                        | 223                                 |
| <i>vinculum</i> .....                     | 13                          | <i>Calymene</i> .....                           | 79, 148                             |
| <i>Buchiceras</i> .....                   | 135                         | <i>bufo</i> .....                               | 247                                 |
| <i>swallowi</i> .....                     | 135                         | <i>senaria</i> .....                            | 79, 148                             |
| <i>Bulinnea</i> .....                     | 106                         | <i>Calymenidae</i> .....                        | 260, 261                            |
| <i>Bulinus limnaeiformis</i> .....        | 16, 221                     | <i>Calyptraea trochiformis</i> .....            | 221                                 |
| <i>nebrascensis</i> .....                 | 16                          | <i>Camæna</i> .....                             | 106                                 |
| <i>perversus</i> .....                    | 221                         | <i>Camarophoria</i> .....                       | 43, 196, 257                        |
| <i>terres</i> .....                       | 15, 221                     | <i>bisulcata</i> .....                          | 256, 257                            |
| <i>vermiculus</i> .....                   | 15, 221                     | <i>cooperensis</i> .....                        | 196                                 |
| <i>Bulinus</i> .....                      | 106, 161                    | <i>globulina</i> .....                          | 52                                  |
| <i>atavus</i> .....                       | 139, 161, 169               | <i>schlotheimi</i> ? .....                      | 257                                 |
| <i>disjunctus</i> .....                   | 145, 161, 169               | * <i>subtrigonia</i> .....                      | 43                                  |
| <i>floridanus</i> .....                   | 170                         | <i>swallowiana</i> .....                        | 257                                 |
| <i>longiusculus</i> .....                 | 106, 161, 169               | <i>Camerinidae</i> .....                        | 31                                  |
| <i>rhomboideus</i> .....                  | 106, 161, 169               | <i>Cameroceras</i> .....                        | 129                                 |
| <i>subelongatus</i> .....                 | 106, 161, 169               | <i>Campeloma</i> .....                          | 107, 112, 162, 166                  |
| <i>Bulla</i> .....                        | 212, 214                    | <i>macrospira</i> .....                         | 112, 162, 168                       |
| <i>dekayi</i> .....                       | 220                         | ( <i>Melantho</i> ) <i>macrospira</i> .....     | 68                                  |
| <i>jugularis</i> .....                    | 212, 214                    | <i>multilineata</i> .....                       | 107, 162, 169                       |
| <i>minor</i> .....                        | 14                          | <i>multilineatum</i> .....                      | 221                                 |
| <i>occidentalis</i> .....                 | 14                          | <i>multistriata</i> .....                       | 107, 162, 169, 221                  |
| <i>petrosa</i> .....                      | 50, 206                     | <i>producta</i> .....                           | 166, 169                            |
| <i>subcylindrica</i> .....                | 16                          | <i>vetula</i> .....                             | 107, 162, 169                       |
| <i>volvaria</i> .....                     | 14                          | <i>vetulum</i> .....                            | 221                                 |
| <i>Bullidae</i> .....                     | 101, 264                    | <i>Campophyllum</i> .....                       | 72, 109, 177                        |
| <i>Bursacrinus</i> .....                  | 26, 59, 118                 | <i>texanum</i> .....                            | 257                                 |
| <i>confirmatus</i> .....                  | 118                         | <i>torquium</i> .....                           | 72, 177                             |
| <i>wachsmuthi</i> .....                   | 26, 59                      | <i>Camptonectes</i> .....                       | 33, 49, 95, 127, 133, 164, 236, 262 |
| <i>Busycyon</i> ? .....                   | 211, 213                    | ( <i>Amusium</i> ) <i>burlingtonensis</i> ..... | 266                                 |
| <i>bairdi</i> .....                       | 16                          | <i>bellistriata</i> .....                       | 95                                  |
| <i>blakei</i> .....                       | 211, 213                    | <i>bellistriatus</i> .....                      | 33, 49, 133, 236, 262               |
| <i>oregonensis</i> .....                  | 50                          | <i>calvatus</i> .....                           | 220                                 |
| <i>Butus</i> ? <i>carbonarius</i> .....   | 53                          | <i>extenuatus</i> .....                         | 33, 49, 180, 236, 262               |
| <i>Bythinella</i> .....                   | 159                         | <i>parvus</i> .....                             | 266                                 |
| <i>gregaria</i> .....                     | 70, 159, 170                | <i>pertenuistriatus</i> .....                   | 236                                 |
|                                           |                             | <i>platessa</i> .....                           | 127, 133                            |
| C.                                        |                             | <i>plataeisiformis</i> .....                    | 164                                 |
| <i>Calenterata</i> .....                  | 177                         | <i>stygius</i> .....                            | 127, 133                            |
| <i>Calceocrinus</i> .....                 | 63, 82, 83, 188             | <i>Camptopteris remondi</i> .....               | 246                                 |
| <i>barrandii</i> .....                    | 188                         | <i>Campylodiscus americ</i> ? .....             | 229                                 |
| <i>bradleyi</i> .....                     | 63, 83                      | <i>Cancellaria</i> .....                        | 210                                 |
| <i>wachsmuthi</i> .....                   | 63, 82                      | <i>petrosa</i> .....                            | 210                                 |
| <i>Calceola</i> .....                     | 99                          | <i>Caninia</i> .....                            | 223                                 |
| <i>Callianassa</i> .....                  | 153                         | <i>Cantharis vaughni</i> .....                  | 49                                  |
| <i>danai</i> .....                        | 13                          | <i>Cantharus</i> .....                          | 103                                 |
| <i>oregonensis</i> .....                  | 227                         | <i>Cantharus</i> .....                          | 103                                 |
| <i>ulrichi</i> .....                      | 153, 157                    | ( <i>Cantharus</i> ) <i>vaughani</i> .....      | 103                                 |
| <i>Callipteris</i> .....                  | 149                         | <i>julesburgensis</i> .....                     | 157                                 |
| <i>sullivanti</i> .....                   | 149                         | <i>Canthyria</i> .....                          | 105                                 |
| <i>Callista</i> .....                     | 28, 100, 269                | <i>Caprina</i> .....                            | 214, 218                            |
| ( <i>Aphrodina</i> ?) <i>tenuis</i> ..... | 100                         | <i>occidentalis</i> .....                       | 215, 218                            |



|                                       | Page.                                                             |
|---------------------------------------|-------------------------------------------------------------------|
| <i>rina planata</i> .....             | 215, 218                                                          |
| <i>rinella coralioidea</i> .....      | 13                                                                |
| <i>rotina</i> .....                   | 93                                                                |
| (Requienia ?) <i>bicornis</i> .....   | 93                                                                |
| <i>texana</i> .....                   | 243                                                               |
| <i>texana</i> .....                   | 220                                                               |
| <i>texana</i> .....                   | 220                                                               |
| <i>ularia diacoides</i> .....         | 220                                                               |
| <i>ulidae</i> .....                   | 132                                                               |
| <i>ulus fragilis</i> .....            | 14                                                                |
| <i>occidentalis</i> .....             | 13, 48                                                            |
| <i>bonarca</i> .....                  | 64, 92                                                            |
| <i>gibbosa</i> .....                  | 64, 92                                                            |
| <i>diidae</i> .....                   | 34, 99, 111, 268, 271                                             |
| <i>dinia</i> .....                    | 164, 234                                                          |
| <i>costata</i> .....                  | 225                                                               |
| <i>cuneata</i> .....                  | 224                                                               |
| <i>cuneata</i> .....                  | 225                                                               |
| <i>exilis</i> .....                   | 224                                                               |
| <i>precisa</i> .....                  | 164                                                               |
| <i>recta</i> .....                    | 224, 225                                                          |
| <i>rdiola</i> .....                   | 197                                                               |
| <i>silicostata</i> .....              | 197                                                               |
| <i>rdiomorpha</i> .....               | 24, 79, 86, 89, 119, 236, 258                                     |
| (Cardiopsis ?) <i>parvirostris</i> .. | 119                                                               |
| <i>missouriensis</i> .....            | 86, 236                                                           |
| <i>obliquata</i> .....                | 68, 79                                                            |
| <i>radiata</i> .....                  | 24                                                                |
| <i>subglobosa</i> .....               | 89                                                                |
| <i>rdiopsis</i> .....                 | 26, 42, 119                                                       |
| <i>radiata</i> .....                  | 42                                                                |
| <i>rdissoides</i> .....               | 34                                                                |
| <i>rdita</i> .....                    | 211, 213, 216, 218, 219, 270, 271                                 |
| <i>abbreviata</i> .....               | 50                                                                |
| <i>brittoni</i> .....                 | 271                                                               |
| <i>carinata</i> .....                 | 50                                                                |
| <i>eminula</i> .....                  | 218                                                               |
| <i>intermedia</i> .....               | 270                                                               |
| <i>littoralis</i> .....               | 271                                                               |
| <i>monilicosta</i> .....              | 50                                                                |
| <i>occidentalis</i> .....             | 50, 216                                                           |
| <i>perantiqua</i> .....               | 271                                                               |
| <i>planicosta</i> .....               | 211, 213, 219                                                     |
| <i>radians</i> .....                  | 50                                                                |
| <i>rhombea</i> .....                  | 271                                                               |
| <i>subtenta</i> .....                 | 50, 206                                                           |
| <i>subtetra</i> .....                 | 220                                                               |
| <i>rdium</i> .....                    | 28, 93, 99, 111, 143, 207, 208, 209, 210, 211, 212, 213, 218, 268 |
| <i>australe</i> .....                 | 225                                                               |
| <i>bellulum</i> .....                 | 93                                                                |
| <i>bellum</i> .....                   | 208                                                               |
| <i>biseriatum</i> .....               | 207, 210                                                          |
| (Cerastoderma) <i>modestum</i> .....  | 50                                                                |
| <i>choctawense</i> .....              | 159                                                               |
| <i>congestum</i> .....                | 218                                                               |
| <i>crebrichinatum</i> .....           | 207, 209                                                          |
| (Criocardium) <i>dumosum</i> .....    | 268                                                               |
| <i>multiradiatum</i> .....            | 268                                                               |
| <i>speciosum</i> .....                | 99                                                                |
| <i>curtum</i> .....                   | 111                                                               |
| <i>elegantulum</i> .....              | 47                                                                |
| <i>eufaulensis</i> .....              | 268                                                               |
| <i>ferox</i> .....                    | 225                                                               |
| (Hemicardium ?) <i>curtum</i> .....   | 28                                                                |
| <i>hermonense</i> .....               | 207                                                               |

|                                         | Page.                                                                                                                                                                                                                                                                            |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Cardium iowensis</i> .....           | 248                                                                                                                                                                                                                                                                              |
| <i>kansasense</i> .....                 | 70, 99                                                                                                                                                                                                                                                                           |
| <i>luteum</i> .....                     | 210, 212                                                                                                                                                                                                                                                                         |
| <i>mediale</i> .....                    | 218                                                                                                                                                                                                                                                                              |
| <i>modestum</i> .....                   | 50, 211, 213                                                                                                                                                                                                                                                                     |
| <i>multistriatum</i> .....              | 253, 255                                                                                                                                                                                                                                                                         |
| <i>ovulum</i> .....                     | 208                                                                                                                                                                                                                                                                              |
| <i>pauperculum</i> .....                | 70, 143                                                                                                                                                                                                                                                                          |
| <i>pertenne</i> .....                   | 28                                                                                                                                                                                                                                                                               |
| (Protocardia) <i>filosum</i> .....      | 218                                                                                                                                                                                                                                                                              |
| <i>multistriatum</i> .....              | 218                                                                                                                                                                                                                                                                              |
| <i>salinense</i> .....                  | 70                                                                                                                                                                                                                                                                               |
| <i>texanum</i> .....                    | 218                                                                                                                                                                                                                                                                              |
| (Protocardium) <i>perelongatum</i> ..   | 268                                                                                                                                                                                                                                                                              |
| <i>rarum</i> .....                      | 256                                                                                                                                                                                                                                                                              |
| <i>ripleyanum</i> .....                 | 268                                                                                                                                                                                                                                                                              |
| <i>ripleyense</i> .....                 | 268                                                                                                                                                                                                                                                                              |
| <i>sancti-sabae</i> .....               | 47                                                                                                                                                                                                                                                                               |
| <i>scitulum</i> .....                   | 17                                                                                                                                                                                                                                                                               |
| <i>shumardi</i> .....                   | 21                                                                                                                                                                                                                                                                               |
| <i>speciosum</i> .....                  | 16                                                                                                                                                                                                                                                                               |
| <i>subcurtum</i> .....                  | 111                                                                                                                                                                                                                                                                              |
| <i>subquadratum</i> .....               | 256                                                                                                                                                                                                                                                                              |
| <i>syriacum</i> .....                   | 207                                                                                                                                                                                                                                                                              |
| <i>trite</i> .....                      | 143                                                                                                                                                                                                                                                                              |
| <i>Caricella flemingii</i> .....        | 221                                                                                                                                                                                                                                                                              |
| <i>Carinifex</i> .....                  | 112                                                                                                                                                                                                                                                                              |
| <i>binneyi</i> .....                    | 65                                                                                                                                                                                                                                                                               |
| <i>tryoni</i> var. <i>conceva</i> ..... | 65                                                                                                                                                                                                                                                                               |
| (Vorticifex) <i>binneyi</i> .....       | 112, 166, 170                                                                                                                                                                                                                                                                    |
| <i>tryoni</i> .....                     | 65, 112, 166, 170                                                                                                                                                                                                                                                                |
| <i>Caryatis</i> .....                   | 100, 271                                                                                                                                                                                                                                                                         |
| <i>ovalis</i> .....                     | 271                                                                                                                                                                                                                                                                              |
| <i>veta</i> .....                       | 271                                                                                                                                                                                                                                                                              |
| <i>Caryophyllia</i> .....               | 142                                                                                                                                                                                                                                                                              |
| <i>egeria</i> .....                     | 142                                                                                                                                                                                                                                                                              |
| <i>johannis</i> .....                   | 142                                                                                                                                                                                                                                                                              |
| <i>Cassidula</i> .....                  | 219                                                                                                                                                                                                                                                                              |
| (Lacinia) <i>alveata</i> .....          | 219                                                                                                                                                                                                                                                                              |
| <i>Cassidulus patelliformis</i> .....   | 222                                                                                                                                                                                                                                                                              |
| <i>Cassiope</i> .....                   | 127, 134                                                                                                                                                                                                                                                                         |
| <i>whitfieldi</i> .....                 | 127, 134                                                                                                                                                                                                                                                                         |
| <i>Cassiopella</i> .....                | 139, 162                                                                                                                                                                                                                                                                         |
| <i>turricula</i> .....                  | 162, 169                                                                                                                                                                                                                                                                         |
| <i>Catenipora escharoides</i> .....     | 247                                                                                                                                                                                                                                                                              |
| <i>gracilis</i> .....                   | 232                                                                                                                                                                                                                                                                              |
| <i>Catilloerinus</i> .....              | 54, 59, 83                                                                                                                                                                                                                                                                       |
| <i>bradleyi</i> .....                   | 54, 83                                                                                                                                                                                                                                                                           |
| <i>wachsmuthi</i> .....                 | 59                                                                                                                                                                                                                                                                               |
| <i>Catillus</i> .....                   | 97                                                                                                                                                                                                                                                                               |
| <i>obliquus</i> .....                   | 221                                                                                                                                                                                                                                                                              |
| <i>Catopygus patelleformis</i> .....    | 222                                                                                                                                                                                                                                                                              |
| <i>Cavolinidae</i> .....                | 31                                                                                                                                                                                                                                                                               |
| <i>Cellepora tubulata</i> .....         | 222                                                                                                                                                                                                                                                                              |
| <i>Cemoria crucibuliformis</i> .....    | 50                                                                                                                                                                                                                                                                               |
| <i>Centrocrinus</i> .....               | 38, 42                                                                                                                                                                                                                                                                           |
| <i>Centronella</i> .....                | 56                                                                                                                                                                                                                                                                               |
| <i>billingsiana</i> .....               | 56                                                                                                                                                                                                                                                                               |
| <i>Cephalopoda</i> .....                | 20, 21, 22, 25, 27, 28, 31, 33, 35, 38, 39, 40, 42, 44, 46, 55, 59, 63, 65, 67, 68, 74, 79, 80, 81, 84, 87, 91, 93, 94, 95, 103, 109, 110, 111, 117, 121, 126, 129, 132, 135, 138, 144, 146, 149, 154, 159, 162, 165, 179, 191, 195, 198, 226, 236, 250, 256, 258, 261, 262, 265 |
| <i>Cerastoderma</i> .....               | 99                                                                                                                                                                                                                                                                               |

|                                                 | Page.                       |                                                                      | Page.                                                                     |
|-------------------------------------------------|-----------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------|
| <i>Ceratiocaris</i> .....                       | 61, 89                      | <i>Chione</i> ( <i>Liophora</i> ) <i>latilirata</i> .....            | 59                                                                        |
| ( <i>Colpocaris</i> ) <i>bradleyi</i> .....     | 68, 89                      | <i>Chiton</i> .....                                                  | 87                                                                        |
| <i>elytroides</i> .....                         | 68, 90                      | <i>carbonarius</i> .....                                             | 87                                                                        |
| <i>sinuatus</i> .....                           | 53, 61                      | <i>Chladocrinus</i> .....                                            | 33                                                                        |
| ( <i>Solenocaris</i> ) <i>strigata</i> .....    | 68, 90                      | <i>Chlamys</i> .....                                                 | 97                                                                        |
| <i>Ceraurus</i> .....                           | 79, 186, 191, 248           | <i>nebrascensis</i> .....                                            | 97                                                                        |
| — ? .....                                       | 191                         | <i>Chonetes</i> .....                                                | 24, 31, 43, 60, 62, 72, 85, 94, 119, 127, 131,<br>177, 182, 235, 245, 257 |
| <i>icarus</i> .....                             | 79                          | <i>deflecta</i> .....                                                | 192                                                                       |
| <i>rarus</i> .....                              | 196                         | <i>filistriata</i> .....                                             | 193                                                                       |
| <i>pleurescans</i> .....                        | 185                         | <i>flemingi</i> ? .....                                              | 257                                                                       |
| <i>Ceratomya</i> .....                          | 269                         | <i>geniculata</i> .....                                              | 119                                                                       |
| <i>peculiaris</i> .....                         | 269                         | <i>glabra</i> .....                                                  | 83, 77                                                                    |
| <i>Ceriphaeidae</i> .....                       | 106, 112, 139               | <i>granulifera</i> .....                                             | 72, 131, 250                                                              |
| <i>Cerithidea</i> .....                         | 161, 180                    | <i>hemispherica</i> .....                                            | 192                                                                       |
| ? <i>nebrascensis</i> .....                     | 169, 180                    | <i>illinoisensis</i> .....                                           | 6                                                                         |
| ( <i>Pirenella</i> ?) <i>nebrascensis</i> ..... | 106, 161                    | ? <i>lowensis</i> .....                                              | 250                                                                       |
| <i>Cerithiidae</i> .....                        | 106                         | <i>loganensis</i> .....                                              | 235                                                                       |
| <i>Cerithiopsidae</i> .....                     | 102                         | <i>macrostriata</i> .....                                            | 193                                                                       |
| <i>Cerithiopsis</i> .....                       | 102                         | <i>mesoloba</i> .....                                                | 131                                                                       |
| <i>moreauensis</i> .....                        | 102                         | ? ? <i>millipunctata</i> .....                                       | 64, 5                                                                     |
| <i>Cerithium</i> .....                          | 180, 210                    | <i>muconata</i> .....                                                | 19, 20, 31, 53, 193                                                       |
| <i>billineatum</i> .....                        | 210                         | <i>permiana</i> .....                                                | 257                                                                       |
| <i>fremonti</i> .....                           | 221, 231                    | <i>planumbona</i> .....                                              | 24, 5                                                                     |
| <i>mediale</i> .....                            | 206                         | <i>platynota</i> .....                                               | 197, 131                                                                  |
| <i>nebrascensis</i> .....                       | 16                          | <i>pusilla</i> .....                                                 | 6                                                                         |
| <i>nodulosum</i> .....                          | 221, 231                    | <i>setigera</i> .....                                                | 116                                                                       |
| <i>pillingi</i> .....                           | 180                         | <i>smithii</i> .....                                                 | 85, 274                                                                   |
| <i>tenerum</i> .....                            | 221, 231                    | <i>variolata</i> .....                                               | 223                                                                       |
| <i>totinum-sanctorum</i> .....                  | 180                         | <i>verneuilliana</i> .....                                           | 20, 72, 177, 245                                                          |
| <i>Chamaecardia</i> .....                       | 86                          | <i>var. utahensis</i> .....                                          | 4                                                                         |
| <i>ovato</i> .....                              | 86                          | <i>Chonophyllum</i> .....                                            | 165                                                                       |
| <i>Chamaemya</i> .....                          | 39, 38, 73, 84, 86          | <i>sedalicens</i> .....                                              | 165                                                                       |
| <i>cooperi</i> .....                            | 32                          | <i>Cibota</i> .....                                                  | 267                                                                       |
| <i>hybrida</i> .....                            | 38                          | <i>multiradiata</i> .....                                            | 267                                                                       |
| <i>leavenworthensis</i> .....                   | 32, 73                      | <i>obesa</i> .....                                                   | 267                                                                       |
| <i>minchaba</i> .....                           | 73, 86                      | <i>rostellata</i> .....                                              | 267                                                                       |
| <i>rhomboides</i> .....                         | 38, 84                      | <i>unipolys</i> .....                                                | 267                                                                       |
| <i>Chonetes</i> .....                           | 55, 131, 138, 147, 158, 257 | <i>Cidaris</i> .....                                                 | 204                                                                       |
| ? ? <i>dimissus</i> .....                       | 147, 158                    | <i>hemigranulosus</i> .....                                          | 159                                                                       |
| <i>lyceopordon</i> .....                        | 231                         | <i>Cinulia</i> .....                                                 | 22, 191                                                                   |
| <i>macrothili</i> .....                         | 257                         | ( <i>Avellana</i> ) <i>pulchella</i> .....                           | 48                                                                        |
| <i>milliporaceus</i> .....                      | 131                         | <i>naticoides</i> .....                                              | 48                                                                        |
| <i>munatlinensis</i> .....                      | 138                         | ( <i>Oligoptycha</i> ) <i>concinna</i> .....                         | 193                                                                       |
| <i>petropollitanus</i> .....                    | 55                          | <i>Cladocora</i> (?) <i>lineata</i> .....                            | 69                                                                        |
| <i>Chonetes</i> .....                           | 180, 268                    | <i>Cladocrinus</i> .....                                             | 33                                                                        |
| <i>Chonetophallus</i> .....                     | 190, 234                    | <i>Cladodus occidentalis</i> .....                                   | 29                                                                        |
| ? <i>tumifrons</i> .....                        | 190, 234                    | <i>Cladopora</i> .....                                               | 155, 192                                                                  |
| <i>Chonetopsis</i> .....                        | 48, 103, 184, 258           | <i>pulchra</i> .....                                                 | 192                                                                       |
| <i>cerithiiformis</i> .....                     | 103                         | <i>reticulata</i> .....                                              | 155                                                                       |
| <i>corona</i> .....                             | 48                          | <i>Clasteria</i> .....                                               | 237                                                                       |
| <i>meschiana</i> .....                          | 48                          | <i>australis</i> .....                                               | 237                                                                       |
| <i>newelliana</i> .....                         | 258                         | <i>Clathropora</i> .....                                             | 155                                                                       |
| ? <i>tesana</i> .....                           | 48                          | <i>fiabellata</i> .....                                              | 231                                                                       |
| <i>Chonetopsis</i> .....                        | 207, 209, 210               | <i>frondosa</i> .....                                                | 155                                                                       |
| ? .....                                         | 210                         | <i>Clathropteris</i> .....                                           | 246                                                                       |
| <i>induratus</i> .....                          | 207                         | <i>Clausilia contraria</i> .....                                     | 221                                                                       |
| <i>nyctinus</i> .....                           | 208                         | <i>teres</i> .....                                                   | 221                                                                       |
| <i>pyrochloides</i> .....                       | 207                         | <i>vermicula</i> .....                                               | 221                                                                       |
| <i>Chonetes nitida</i> .....                    | 226                         | <i>Clavagella</i> .....                                              | 270                                                                       |
| <i>nitida</i> .....                             | 226                         | <i>armata</i> .....                                                  | 270                                                                       |
| <i>nitida</i> .....                             | 226                         | <i>Clavatul</i> ? .....                                              | 211, 213                                                                  |
| <i>nitidissima</i> .....                        | 226                         | ? <i>californica</i> .....                                           | 211, 213                                                                  |
| <i>Chonetes</i> .....                           | 100                         | <i>Clavellites</i> ( <i>Peistochilus</i> ) <i>scarboroughi</i> ..... | 69                                                                        |
| ( <i>Liophora</i> ) <i>nitens</i> .....         | 50                          | <i>Clavella vicksburgensis</i> .....                                 | 222                                                                       |
| <i>nitida</i> .....                             | 50                          |                                                                      |                                                                           |



|                             | Page.                   |
|-----------------------------|-------------------------|
| Clavifusus altile.....      | 222                     |
| cooperi.....                | 222                     |
| Cleidophorus.....           | 32                      |
| Cleobis.....                | <b>223</b> , 225        |
| gracilis.....               | <b>224</b>              |
| grandis.....                | <b>223</b>              |
| recta.....                  | <b>224</b>              |
| Clidophorus.....            | 79                      |
| (Nuculites ?) fabula.....   | 79                      |
| pallasi.....                | 51                      |
| (Pleurophorus) simplus..... | 51                      |
| solenoides.....             | 51                      |
| Climacograptus.....         | 129                     |
| Clinopistha.....            | <b>64</b> , 80, 86, 178 |
| antiqua.....                | <b>66</b> , 80          |
| radiata.....                | 178                     |
| var. levis.....             | 64, 86                  |
| Clisiophyllum.....          | 30, <b>223</b>          |
| gabbi.....                  | <b>30</b>               |
| Closteriscus.....           | <b>102</b>              |
| tenuilineatus.....          | 102                     |
| Clydonites.....             | 110, 239                |
| laevadorsatus.....          | 110, 239                |
| Clydonitide.....            | <b>110</b> , 239        |
| Clypeaster jonesii.....     | 222                     |
| rogersi.....                | 222                     |
| tunidus.....                | 222                     |
| Cocconeis concentrica.....  | 229                     |
| finnica.....                | 229                     |
| gemmata.....                | 229                     |
| lineata.....                | 229                     |
| oblonga.....                | 229                     |
| praetexta.....              | 203, 229                |
| punctata.....               | 229                     |
| Cocconema asperum.....      | 203, 229                |
| cistula.....                | 229                     |
| cymbiforme.....             | 203                     |
| gibbum.....                 | 229                     |
| gracile.....                | 229                     |
| lanceolata.....             | 229                     |
| lunula.....                 | 229                     |
| Codonites.....              | <b>64</b> , 83, 87      |
| gracilis.....               | <b>64</b> , 83          |
| stelliformis.....           | 83, 87                  |
| Cœlocrinus.....             | 42, <b>117</b>          |
| concavus.....               | 42                      |
| subspinosus.....            | <b>117</b>              |
| Cœlopleurus infulatus.....  | 222                     |
| Cœlospira concava.....      | 36                      |
| Cœleolus.....               | 195                     |
| levis.....                  | <b>195</b>              |
| Coleopron.....              | 191                     |
| minuta.....                 | <b>191</b>              |
| Colpocaris.....             | 89                      |
| Columna.....                | 106, 161                |
| teres.....                  | 106, 161, 169           |
| vermicula.....              | 106, 161, 169           |
| var. contraria.....         | 106                     |
| Columnaria.....             | 223                     |
| ? sexradiata.....           | 49                      |
| thomii.....                 | <b>233</b>              |
| Celus.....                  | 212, 214                |
| arctatus.....               | 50, <b>212</b> , 214    |
| Comarocystites.....         | 37, 54                  |
| shumardi.....               | <b>37</b> , 54          |

|                                                   | Page.                                    |
|---------------------------------------------------|------------------------------------------|
| Comarocystites shumardi var. obconicus.....       | 37, 54                                   |
| Combophyllum.....                                 | 62                                       |
| multiradiatum.....                                | <b>62</b>                                |
| Complanaria.....                                  | 99                                       |
| Conactæon.....                                    | 29                                       |
| Conchifera.....                                   | 21, 22, 116, 119, 127, 130, 132, 133,    |
| 135, 136, 137, 138, 140, 142, 144, 146, 147, 151, |                                          |
| 153, 155, 158, 159, 160, 162, 163, 165, 178, 250  |                                          |
| Concholepas pygmaea.....                          | 221                                      |
| Conchopeltis.....                                 | <b>185</b>                               |
| alternata.....                                    | <b>185</b>                               |
| minnesotensis.....                                | <b>185</b>                               |
| Confervites? tenella.....                         | <b>227</b>                               |
| Conifera.....                                     | 226                                      |
| Conocardium.....                                  | 38, 80, 92, 117, 130, 194                |
| nevadensis.....                                   | <b>194</b>                               |
| obliquum.....                                     | <b>38</b> , 92                           |
| ohioense.....                                     | <b>66</b> , 80                           |
| pulcellum.....                                    | <b>117</b>                               |
| trigonale.....                                    | 80                                       |
| Conocephalites.....                               | 186, 234                                 |
| calciferus.....                                   | <b>186</b>                               |
| hartii.....                                       | <b>186</b>                               |
| (Pterocephalus) laticeps.....                     | <b>234</b>                               |
| subcoronatus.....                                 | <b>234</b>                               |
| Conocoryphe.....                                  | 108, 129, 198, 234                       |
| (Baillia) baileyi.....                            | 198                                      |
| (Conocephalites) kingii.....                      | <b>65</b>                                |
| elegans.....                                      | 198                                      |
| matthewi.....                                     | 198                                      |
| (Ptychoparia) gallatinensis.....                  | <b>76</b>                                |
| kingii.....                                       | 108, 129                                 |
| walcotti.....                                     | 198                                      |
| Conodictyum.....                                  | 40                                       |
| radiatum.....                                     | 40                                       |
| Conomitra fusoides.....                           | 221                                      |
| Constellaria.....                                 | 155                                      |
| antheloidea.....                                  | 155                                      |
| Conularia.....                                    | 39, 81, 84, 89, 118, 138, 149, 151, 165, |
| 185, 195, 198, 226                                |                                          |
| byblis.....                                       | <b>118</b>                               |
| crustula.....                                     | 151, <b>165</b>                          |
| elegantula.....                                   | <b>67</b> , 81                           |
| inornata.....                                     | <b>226</b>                               |
| levigata.....                                     | 226                                      |
| micronema.....                                    | <b>67</b> , 89                           |
| missouriensis.....                                | 84, 149, 198                             |
| molaris.....                                      | <b>138</b>                               |
| multicostata.....                                 | <b>39</b>                                |
| newberryi.....                                    | 89                                       |
| quadrata.....                                     | <b>185</b>                               |
| subcarbonaria.....                                | <b>39</b> , 84                           |
| tenuistriata?.....                                | 226                                      |
| vieta.....                                        | <b>118</b>                               |
| whitell.....                                      | <b>39</b>                                |
| Coralliochama.....                                | <b>180</b>                               |
| oreutti.....                                      | <b>180</b>                               |
| Corbicula.....                                    | 99, 105, 112, 137, 140, 160, 166, 266    |
| aequilateralis.....                               | <b>76</b>                                |
| annosa.....                                       | 266                                      |
| angheyi.....                                      | <b>166</b> , 168                         |
| berthoudi.....                                    | <b>166</b> , 168                         |
| cardinaliformis.....                              | <b>140</b> , 160                         |
| cleburni.....                                     | <b>140</b> , 160, 168                    |
| crassatelliformis.....                            | <b>70</b>                                |





|                             | Page.                                                                                                                                                                         |                                      | Page.                       |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------------------------|
| Crinoidea.....              | 26, 33, 37, 40, 41, 42, 43, 44, 45, 55,<br>118, 121, 127, 133, 255, 262                                                                                                       | Cyathocrinus kelloggi.....           | 118                         |
| Crinoidea.....              | 232                                                                                                                                                                           | lamellosus.....                      | 117                         |
| Criocordium.....            | 90, 268, 271                                                                                                                                                                  | multibrachiatus.....                 | 154                         |
| nucleolus.....              | 271                                                                                                                                                                           | ? poterium.....                      | 64                          |
| Criptogamia.....            | 128                                                                                                                                                                           | quinquelobus.....                    | 37, 60                      |
| Crucibulum.....             | 212, 214                                                                                                                                                                      | ramosus.....                         | 52                          |
| spinosum.....               | 212, 214                                                                                                                                                                      | rigidus.....                         | 118                         |
| Crustacea.....              | 31, 36, 39, 46, 55, 56, 57, 58, 59, 61, 65,<br>67, 68, 74, 79, 80, 81, 89, 91, 108, 109,<br>121, 126, 129, 136, 148, 149, 153, 159,<br>179, 191, 195, 227, 234, 235, 250, 257 | saffordi.....                        | 23, 43                      |
| Cruziana.....               | 126, 128                                                                                                                                                                      | sangamonensis.....                   | 23, 45                      |
| linnaeasoni.....            | 126, 128                                                                                                                                                                      | scitulus.....                        | 23, 27                      |
| rustica.....                | 126, 128                                                                                                                                                                      | sculptilis.....                      | 27, 42                      |
| Crypta praeputa.....        | 50                                                                                                                                                                            | stillatus.....                       | 150, 163                    |
| Cryptoceras.....            | 39, 104                                                                                                                                                                       | subtumidus.....                      | 37                          |
| Cryptogramma floridana..... | 220                                                                                                                                                                           | wachsmuthi.....                      | 26, 60                      |
| ? penita.....               | 220                                                                                                                                                                           | Cyathophycus.....                    | 186                         |
| Cryptomya.....              | 215, 216                                                                                                                                                                      | reticulatus.....                     | 186                         |
| ovalis.....                 | 215, 216                                                                                                                                                                      | subsphericus.....                    | 186                         |
| Cryptonella.....            | 193                                                                                                                                                                           | Cyathophyllidæ.....                  | 62, 108, 109, 121, 223      |
| ? circula.....              | 193                                                                                                                                                                           | Cyathophyllidæ.....                  | 232                         |
| pinonensis.....             | 193                                                                                                                                                                           | Cyathophyllum.....                   | 62, 108, 109, 223           |
| Cryptorhynchus.....         | 103                                                                                                                                                                           | — ?.....                             | 192                         |
| Ctenobranchiata.....        | 34                                                                                                                                                                            | articum.....                         | 62                          |
| Ctenoides acutilineata..... | 47                                                                                                                                                                            | caliculare.....                      | 247                         |
| denticulata.....            | 47                                                                                                                                                                            | (Campophyllum ?) neva-<br>dense..... | 109                         |
| squarrosa.....              | 47                                                                                                                                                                            | corinthium.....                      | 247                         |
| Cucullæa.....               | 98, 111, 208, 209, 218                                                                                                                                                        | corniculum.....                      | 192                         |
| exigua.....                 | 16                                                                                                                                                                            | davidsoni.....                       | 192                         |
| haguei.....                 | 111                                                                                                                                                                           | heliathoides.....                    | 247                         |
| (Idonearca ?) cordata.....  | 98                                                                                                                                                                            | palmeria.....                        | 108                         |
| nebrascensis.....           | 98                                                                                                                                                                            | profundum.....                       | 248                         |
| shumardi.....               | 98                                                                                                                                                                            | rugosum.....                         | 192                         |
| lintea.....                 | 208                                                                                                                                                                           | subcaespitosum.....                  | 109                         |
| nebrascensis.....           | 250                                                                                                                                                                           | turbatum ?.....                      | 247                         |
| ononcheila.....             | 220                                                                                                                                                                           | undulatum et multiplicatum.....      | 247                         |
| opiformis.....              | 209                                                                                                                                                                           | vesiculosum ?.....                   | 247                         |
| parallela.....              | 208                                                                                                                                                                           | Cyathopora iowensis.....             | 247                         |
| subrotunda.....             | 208                                                                                                                                                                           | Cyclas.....                          | 99, 215, 217                |
| terminalis.....             | 218                                                                                                                                                                           | estrellana.....                      | 217                         |
| transversa.....             | 220                                                                                                                                                                           | formosa.....                         | 15                          |
| (Trigonarca ?) obliqua..... | 111                                                                                                                                                                           | fragilis.....                        | 15                          |
| ! Cucullæarca.....          | 98                                                                                                                                                                            | permacra.....                        | 50, 217                     |
| Cucullifera.....            | 222                                                                                                                                                                           | subellipticus.....                   | 15                          |
| Cupellæocrinus.....         | 38                                                                                                                                                                            | tetrica.....                         | 215                         |
| Cyathaxonia.....            | 52                                                                                                                                                                            | Cyclina ? circularis.....            | 48                          |
| Cyathocrinites.....         | 54, 82, 87                                                                                                                                                                    | Cyclobranchiata.....                 | 34                          |
| fragilis.....               | 54, 82                                                                                                                                                                        | Cyclonema.....                       | 79, 80, 148                 |
| ? poterium.....             | 83                                                                                                                                                                            | bilix.....                           | 79, 148                     |
| sculptilis.....             | 82                                                                                                                                                                            | crenulata.....                       | 67, 80                      |
| tenuidaetylus.....          | 54, 82                                                                                                                                                                        | Cyclopteris.....                     | 246                         |
| Cyathocrinus.....           | 23, 26, 37, 38, 42, 43, 45, 53, 60, 81,<br>117, 118, 150, 154, 163, 249, 251                                                                                                  | moquensis.....                       | 246                         |
| — ?.....                    | 19                                                                                                                                                                            | Cyclora.....                         | 79                          |
| angulatus.....              | 23, 43                                                                                                                                                                        | minuta.....                          | 79                          |
| arboreus.....               | 38, 60                                                                                                                                                                        | ? parvula.....                       | 79                          |
| cornutus.....               | 249, 251                                                                                                                                                                      | Cylicha.....                         | 101                         |
| ? crassus.....              | 23                                                                                                                                                                            | dekayi.....                          | 220                         |
| enormis.....                | 37, 60                                                                                                                                                                        | petrosa.....                         | 50                          |
| farleyi.....                | 40, 60                                                                                                                                                                        | scitula.....                         | 21, 101                     |
| granuliferus.....           | 255                                                                                                                                                                           | ? volvaria.....                      | 101                         |
| inflexus.....               | 52                                                                                                                                                                            | Cylichidæ.....                       | 101                         |
| iowensis.....               | 249, 251                                                                                                                                                                      | Cylindrites.....                     | 29                          |
|                             |                                                                                                                                                                               | Cymatoplena ? campylodiscus.....     | 203                         |
|                             |                                                                                                                                                                               | Cymbella gibba.....                  | 203                         |
|                             |                                                                                                                                                                               | Cymbopora.....                       | 100                         |
|                             |                                                                                                                                                                               | Cymella.....                         | 48, 101, 134, 261, 264, 268 |

|                                                   | Page.                  |                                               | Page.                              |
|---------------------------------------------------|------------------------|-----------------------------------------------|------------------------------------|
| <i>Cymella bella</i> .....                        | 101                    | <i>Cyrena securis</i> .....                   | 143                                |
| <i>mekki</i> .....                                | 203                    | ( <i>Veloritina</i> ) <i>durkeel</i> .....    | 125                                |
| <i>Cymosia kamarekii</i> .....                    | 222                    | <i>erecta</i> .....                           | 137                                |
| <i>Cypharbia</i> .....                            | 148, 191               | <i>Cyrenidae</i> .....                        | 99, 105, 112, 125                  |
| ? <i>brevimarginatus</i> .....                    | 191                    | <i>Cyrtia</i> .....                           | 119                                |
| <i>christyi</i> .....                             | 148                    | <i>curvilineata</i> .....                     | 119                                |
| <i>Cyphosoma taxanum</i> .....                    | 233                    | <i>Cyrtina</i> .....                          | 57, 63, 65, 118                    |
| <i>Cypricardella</i> .....                        | 117, 194, 197          | <i>billingsi</i> .....                        | 63                                 |
| <i>quadrata</i> .....                             | 117                    | <i>dalmiani</i> .....                         | 57                                 |
| <i>Cypricardia</i> .....                          | 225, 230, 232          | <i>dauidsoni</i> .....                        | 193                                |
| <i>acutifrons</i> .....                           | 226                    | <i>hamiltonensis</i> .....                    | 63, 118                            |
| <i>arceos</i> .....                               | 226                    | <i>panda</i> .....                            | 63                                 |
| ( <i>A. vicula</i> ?) <i>veneris</i> .....        | 226                    | <i>triquetra</i> .....                        | 58                                 |
| <i>imbricata</i> .....                            | 226                    | <i>Cyrtoceras</i> .....                       | 25, 46, 59, 91, 120, 121, 126, 128 |
| <i>occidentalis</i> .....                         | 229                    | ( <i>A. ploceras</i> ) <i>curtum</i> .....    | 4                                  |
| <i>parvula</i> .....                              | 226                    | <i>ceasar</i> .....                           | 236                                |
| <i>rigida</i> .....                               | 117                    | <i>conicum</i> .....                          | 247                                |
| <i>rugulosa</i> .....                             | 224                    | <i>curtum</i> .....                           | 25, 27                             |
| <i>saliqua</i> .....                              | 226                    | <i>dardanus</i> .....                         | 51                                 |
| <i>simplex</i> .....                              | 226                    | <i>dictyum</i> .....                          | 136                                |
| <i>sinuosa</i> .....                              | 224                    | ? <i>dilatatum</i> .....                      | 25, 46                             |
| <i>Cypricardina</i> .....                         | 90, 194                | <i>nevadense</i> .....                        | 195                                |
| <i>carbonaria</i> .....                           | 67, 90                 | <i>ohioense</i> .....                         | 67                                 |
| <i>indenta</i> .....                              | 194                    | <i>ohioensis</i> .....                        | 51                                 |
| <i>Cypricardites</i> .....                        | 54, 55, 79, 248        | <i>sacculum</i> .....                         | 59                                 |
| — ? .....                                         | 55                     | <i>Cyrtoceratites</i> .....                   | 51                                 |
| ? <i>carinata</i> .....                           | 79                     | <i>Cyrtochilu</i> .....                       | 106                                |
| <i>obliquus</i> .....                             | 55                     | <i>Cyrtolites</i> .....                       | 54, 79, 121, 191, 194              |
| <i>sterlingensis</i> .....                        | 79                     | ? <i>costatus</i> .....                       | 79                                 |
| <i>Cypridia</i> .....                             | 121                    | <i>dyeri</i> .....                            | 79                                 |
| <i>Cypridulites</i> .....                         | 121, 136               | ? <i>gilliansi</i> .....                      | 191                                |
| <i>Cypridaria</i> .....                           | 92, 98, 111, 269       | <i>imbricatus</i> .....                       | 56                                 |
| <i>ferasa</i> .....                               | 93                     | ( <i>Microceras</i> ) <i>inornatus</i> .....  | 79                                 |
| <i>dissecta</i> .....                             | 269                    | <i>ornatus</i> .....                          | 79                                 |
| <i>depressa</i> .....                             | 269                    | <i>sinuatus</i> .....                         | 191, 234                           |
| <i>excavata</i> .....                             | 269                    | <i>Cystophyllum</i> .....                     | 62, 155, 192, 223                  |
| <i>helprinii</i> .....                            | 269                    | <i>americanum</i> .....                       | 193                                |
| <i>opaca</i> .....                                | 269                    | var. <i>atticum</i> .....                     | 62                                 |
| <i>subulata</i> .....                             | 111                    | <i>vesiculosum</i> .....                      | 155                                |
| <i>tenuis</i> .....                               | 92                     | <i>Cystidea</i> .....                         | 57                                 |
| <i>Cyprina</i> .....                              | 99, 176                | <i>Cystoidea</i> .....                        | 54, 77                             |
| <i>arenaria</i> .....                             | 18, 47                 | <i>Cystocleites</i> ? .....                   | 227                                |
| <i>compressa</i> .....                            | 18                     | <i>Cythere</i> .....                          | 74, 79, 121                        |
| <i>cardata</i> .....                              | 18                     | <i>cincinnatiensis</i> .....                  | 68, 79                             |
| ? <i>dallii</i> .....                             | 176                    | <i>nebrascensis</i> .....                     | 74                                 |
| <i>humilis</i> .....                              | 21, 47                 | <i>simplex</i> .....                          | 191                                |
| <i>lappacei</i> .....                             | 48                     | <i>Cytherea</i> .....                         | 207, 211, 212, 216, 218, 219       |
| <i>nata</i> .....                                 | 18, 99                 | <i>deweyi</i> .....                           | 15, 48                             |
| var. <i>compressa</i> .....                       | 99                     | <i>lamarensis</i> .....                       | 48, 139                            |
| <i>antiquaria</i> .....                           | 18, 48                 | <i>lenticularis</i> .....                     | 229                                |
| <i>Cypridula</i> .....                            | 200, 205, 268, 271     | <i>leonensis</i> .....                        | 48, 218                            |
| <i>Cyprina</i> .....                              | 136                    | ? ( <i>Meretrix</i> ) <i>dalliana</i> ? ..... | 216                                |
| ? .....                                           | 136                    | <i>missouriana</i> .....                      | 48, 20                             |
| <i>Cyprina</i> .....                              | 99, 125, 137, 143, 158 | <i>nebrascensis</i> .....                     | 15, 48                             |
| <i>atenuata</i> .....                             | 47                     | <i>nuttall</i> .....                          | 219                                |
| <i>reticulata</i> .....                           | 76, 158, 167           | <i>orbiculata</i> .....                       | 13, 48                             |
| ( <i>trichilepta</i> ) <i>cytheriformis</i> ..... | 21                     | <i>oregonensis</i> .....                      | 59                                 |
| <i>durkeel</i> .....                              | 66                     | <i>ovata</i> .....                            | 229                                |
| <i>habituata</i> .....                            | 99, 167                | <i>owenana</i> .....                          | 16, 48                             |
| <i>hugoyi</i> .....                               | 86                     | <i>parvula</i> .....                          | 231                                |
| <i>lappacea</i> .....                             | 143                    | <i>pellucida</i> .....                        | 16, 48                             |
| <i>littoralis</i> .....                           | 15                     | <i>syriaca</i> .....                          | 207                                |
| <i>littoralis</i> .....                           | 15                     | <i>tenuis</i> .....                           | 13, 48                             |
| <i>littoralis</i> .....                           | 15                     | <i>texana</i> .....                           | 48, 218                            |



|                                               | Page.                                               |
|-----------------------------------------------|-----------------------------------------------------|
| <i>Cytherea tippiana</i> .....                | 48                                                  |
| <i>vespertina</i> .....                       | 50                                                  |
| <i>Cytherodon</i> .....                       | 194                                                 |
| D.                                            |                                                     |
| <i>Dalmania</i> .....                         | 39                                                  |
| <i>danae</i> .....                            | 39                                                  |
| <i>Dalmanites</i> .....                       | 57, 58, 79, 81, 109, 186, 195                       |
| <i>carleyi</i> .....                          | 69, 79                                              |
| <i>danae</i> .....                            | 56                                                  |
| <i>intermedius</i> .....                      | 186                                                 |
| <i>meeki</i> .....                            | 195                                                 |
| ( <i>Odontocephalus</i> ) <i>ageria</i> ..... | 58                                                  |
| <i>ohioensis</i> .....                        | 67, 81                                              |
| <i>tridentiferus</i> .....                    | 57                                                  |
| <i>Dawsonella meeki</i> .....                 | 167                                                 |
| <i>Decapoda</i> .....                         | 35, 37, 46, 61                                      |
| <i>Delphinula depressa</i> .....              | 221                                                 |
| <i>plana</i> .....                            | 221                                                 |
| <i>Delthyris</i> .....                        | 247, 248                                            |
| <i>eurutelines</i> .....                      | 247                                                 |
| <i>expansus</i> .....                         | 248                                                 |
| <i>Deltodus mercuri</i> .....                 | 246                                                 |
| <i>Dendrocinus</i> .....                      | 55, 77, 188                                         |
| <i>casci</i> .....                            | 66                                                  |
| <i>oswegöensis</i> .....                      | 55                                                  |
| <i>retractilis</i> .....                      | 188                                                 |
| <i>Dendrograptus</i> .....                    | 187                                                 |
| <i>compactus</i> .....                        | 187                                                 |
| <i>simplex</i> .....                          | 187                                                 |
| <i>tenuiramosus</i> .....                     | 187                                                 |
| <i>Dentalidae</i> .....                       | 34, 101, 132, 264                                   |
| <i>Dentalium</i> .....                        | 26, 34, 44, 74, 86, 93, 95, 101, 127, 132, 209, 264 |
| <i>annulostriatum</i> .....                   | 65, 86                                              |
| <i>cama</i> .....                             | 127, 132                                            |
| <i>cretaceum</i> .....                        | 209                                                 |
| ( <i>Ditropa</i> ?) <i>pusillum</i> .....     | 221                                                 |
| <i>fragilis</i> .....                         | 14                                                  |
| <i>gracilis</i> .....                         | 13, 105, 264                                        |
| <i>komookense</i> .....                       | 93                                                  |
| <i>meekianum</i> .....                        | 74, 86                                              |
| <i>nanaimoensis</i> .....                     | 17                                                  |
| <i>pauperculum</i> .....                      | 21                                                  |
| ? <i>subquadratum</i> .....                   | 22, 34, 95                                          |
| <i>thallus</i> .....                          | 50                                                  |
| <i>venustum</i> .....                         | 26, 43                                              |
| <i>Diadora</i> .....                          | 216                                                 |
| <i>crucibuliformis</i> .....                  | 216                                                 |
| <i>Diaeca</i> .....                           | 132, 133, 134, 135                                  |
| <i>Dianchora</i> .....                        | 266                                                 |
| <i>echinata</i> .....                         | 266                                                 |
| <i>Diastropa</i> .....                        | 107                                                 |
| <i>Dibranchiata</i> .....                     | 35, 105, 263                                        |
| <i>Dicellocephalus</i> .....                  | 126, 129, 189, 191                                  |
| ? <i>angustifrons</i> .....                   | 189                                                 |
| <i>bilobatus</i> .....                        | 189                                                 |
| ? <i>expansus</i> .....                       | 190                                                 |
| <i>finalis</i> .....                          | 191                                                 |
| <i>flagricaudus</i> .....                     | 126, 129                                            |
| <i>inexpectans</i> .....                      | 191                                                 |
| <i>marica</i> .....                           | 189                                                 |
| <i>nasutus</i> .....                          | 189                                                 |
| <i>osceola</i> .....                          | 189                                                 |
| ? <i>quadriceps</i> .....                     | 189                                                 |

|                                                    | Page.                                             |
|----------------------------------------------------|---------------------------------------------------|
| <i>Dicellocephalus richmondensis</i> .....         | 189                                               |
| <i>iole</i> .....                                  | 189                                               |
| <i>Diceras</i> .....                               | 268                                               |
| <i>dactyloides</i> .....                           | 268                                               |
| <i>Dichoerinus</i> .....                           | 23, 42, 43, 54, 63, 82, 83, 84, 91, 118, 249, 251 |
| <i>angustus</i> .....                              | 118                                               |
| <i>constrictus</i> .....                           | 23, 43                                            |
| <i>conus</i> .....                                 | 23, 42                                            |
| <i>cornigerus</i> .....                            | 84                                                |
| <i>crassitestus</i> .....                          | 118                                               |
| <i>expansus</i> .....                              | 54, 83                                            |
| <i>ficus</i> .....                                 | 83, 91                                            |
| <i>lineatus</i> .....                              | 63, 82                                            |
| <i>ovatus</i> .....                                | 249, 251                                          |
| <i>pisum</i> .....                                 | 63, 82                                            |
| ( <i>Pterotocrinus</i> ) <i>chesterensis</i> ..... | 23                                                |
| <i>crassus</i> .....                               | 23                                                |
| <i>striatus</i> .....                              | 249, 251                                          |
| <i>Dicraniscus</i> .....                           | 70                                                |
| <i>ortoni</i> .....                                | 70                                                |
| <i>Dicranobranchia</i> .....                       | 132                                               |
| <i>Dictyonema fenestrata</i> .....                 | 232                                               |
| <i>Dielasma</i> .....                              | 127, 130, 132                                     |
| ? <i>bovidens</i> .....                            | 127                                               |
| <i>Dikelocephalus</i> .....                        | 231, 234, 250                                     |
| <i>bilobatus</i> .....                             | 234                                               |
| <i>flabellifer</i> .....                           | 234                                               |
| <i>gothicus</i> .....                              | 234                                               |
| <i>granulosus</i> .....                            | 250                                               |
| <i>iowensis</i> .....                              | 249                                               |
| <i>miniscœnsis</i> .....                           | 250                                               |
| <i>minnesotensis</i> .....                         | 250                                               |
| <i>multicinctus</i> .....                          | 234                                               |
| <i>pepinensis</i> .....                            | 250                                               |
| <i>quadriceps</i> .....                            | 234                                               |
| <i>washatchensis</i> .....                         | 234                                               |
| <i>Dimyaria</i> .....                              | 98, 105, 133, 267                                 |
| <i>Diodora crucibuliformis</i> .....               | 50                                                |
| <i>Dione</i> .....                                 | 100                                               |
| <i>angustifrons</i> .....                          | 50                                                |
| ? <i>brevilineata</i> .....                        | 50                                                |
| <i>decisa</i> .....                                | 50                                                |
| <i>eufalensis</i> .....                            | 48                                                |
| <i>lamarensis</i> .....                            | 48                                                |
| <i>leonensis</i> .....                             | 48                                                |
| [?] <i>meekiana</i> .....                          | 48                                                |
| <i>missouriana</i> .....                           | 48                                                |
| <i>nebrascensis</i> .....                          | 48                                                |
| <i>orbiculata</i> .....                            | 48                                                |
| <i>oregonensis</i> .....                           | 50                                                |
| <i>ovata</i> .....                                 | 230                                               |
| <i>owenana</i> .....                               | 48                                                |
| ? <i>pellucida</i> .....                           | 48                                                |
| [?] <i>ripleyana</i> .....                         | 48                                                |
| [?] <i>tenuis</i> .....                            | 48                                                |
| <i>texana</i> .....                                | 48                                                |
| <i>tippiana</i> .....                              | 48                                                |
| <i>uniomeris</i> .....                             | 50                                                |
| <i>vespertina</i> .....                            | 50                                                |
| <i>Diphyphyllum</i> .....                          | 108, 155                                          |
| <i>archiaci</i> .....                              | 155                                               |
| <i>arundinaceum</i> .....                          | 155                                               |
| <i>fasciculum</i> .....                            | 108                                               |
| <i>simcöense</i> .....                             | 192                                               |

|                                                   | Page.                                       |                                    | Page.    |
|---------------------------------------------------|---------------------------------------------|------------------------------------|----------|
| <i>Diporphyllum stramineum</i> .....              | 155                                         | <i>Drepanocheilus</i> .....        | 48, 102  |
| <i>Diplodon</i> .....                             | 105                                         | <i>Dreissena leucopheata</i> ..... | 108      |
| <i>Diplograptus</i> .....                         | 129                                         | <i>Drillia lonsdalei</i> .....     | 222      |
| <i>Diploschisma</i> .....                         | 266                                         | <i>texana</i> .....                | 222      |
| <i>cretacea</i> .....                             | 266                                         | <i>Dymyria</i> .....               | 182, 188 |
| <i>Discinilis</i> .....                           | 110                                         | <i>Dyanomya</i> .....              | 105      |
| <i>Discina</i> .....                              | 85, 89, 110, 119, 177, 192, 196             | <i>Dystactella</i> .....           | 194      |
| — <i>?</i> .....                                  | 110, 192                                    | <i>insularis</i> .....             | 194      |
| <i>capax</i> .....                                | 119                                         |                                    |          |
| <i>ceanota</i> .....                              | 196                                         |                                    |          |
| <i>convexa</i> .....                              | 177                                         |                                    |          |
| <i>lodensis</i> .....                             | 192                                         |                                    |          |
| <i>lugubris</i> .....                             | 49                                          |                                    |          |
| <i>manhattanensis</i> .....                       | 90                                          |                                    |          |
| <i>minuta</i> .....                               | 192                                         |                                    |          |
| <i>multilineata</i> .....                         | 49                                          |                                    |          |
| <i>newberryi</i> .....                            | 196                                         |                                    |          |
| <i>nitida</i> .....                               | 85, 177, 196                                |                                    |          |
| (Orbiculoidea) <i>newberryi</i> .....             | 89                                          |                                    |          |
| <i>?</i> <i>pleurites</i> .....                   | 89                                          |                                    |          |
| <i>tennilineata</i> .....                         | 90                                          |                                    |          |
| <i>Discites</i> .....                             | 39, 104                                     |                                    |          |
| <i>tuberculatus</i> .....                         | 250                                         |                                    |          |
| <i>Discoedustrellaria boned</i> .....             | 230                                         |                                    |          |
| <i>Discophyeus</i> .....                          | 186                                         |                                    |          |
| <i>typicalis</i> .....                            | 186                                         |                                    |          |
| <i>Discoplea oregonica</i> .....                  | 229                                         |                                    |          |
| <i>atmospharica</i> .....                         | 203                                         |                                    |          |
| <i>Diacoscaphites</i> .....                       | 104                                         |                                    |          |
| <i>Diacosorus conoideus</i> .....                 | 232                                         |                                    |          |
| <i>Dapetora</i> .....                             | 205                                         |                                    |          |
| <i>constricta</i> .....                           | 205                                         |                                    |          |
| <i>Dithyrocaris</i> .....                         | 87, 179                                     |                                    |          |
| <i>carbonarius</i> .....                          | 65, 87, 179                                 |                                    |          |
| <i>Ditrupe subconrotata</i> .....                 | 221                                         |                                    |          |
| <i>Diphygus</i> .....                             | 102                                         |                                    |          |
| <i>Dulabera</i> .....                             | 56                                          |                                    |          |
| <i>?</i> <i>carinata</i> .....                    | 68                                          |                                    |          |
| <i>sterlingensis</i> .....                        | 40, 56                                      |                                    |          |
| <i>Dulacrinus ornatus</i> .....                   | 66                                          |                                    |          |
| <i>Dulopula</i> .....                             | 222                                         |                                    |          |
| <i>Dulium petrosum</i> .....                      | 206                                         |                                    |          |
| <i>laurella</i> .....                             | 99                                          |                                    |          |
| <i>laurelidae</i> .....                           | 269                                         |                                    |          |
| <i>laurea</i> .....                               | 269                                         |                                    |          |
| <i>aurilli</i> .....                              | 269                                         |                                    |          |
| <i>?</i> <i>protosia</i> .....                    | 50, 206                                     |                                    |          |
| <i>Duvetinus</i> .....                            | 54, 82                                      |                                    |          |
| <i>canaliculatus</i> .....                        | 82                                          |                                    |          |
| <i>quonquelobus</i> var. <i>intermedius</i> ..... | 54, 82                                      |                                    |          |
| <i>roemer</i> .....                               | 54, 82                                      |                                    |          |
| <i>quicorula</i> .....                            | 82                                          |                                    |          |
| <i>Echinia</i> .....                              | 211, 212, 215, 216, 217, 260, 262, 264, 269 |                                    |          |
| <i>alta</i> .....                                 | 211, 213, 215, 216, 217                     |                                    |          |
| <i>arctica</i> .....                              | 269                                         |                                    |          |
| <i>galei</i> .....                                | 269                                         |                                    |          |
| <i>gerata</i> .....                               | 220                                         |                                    |          |
| <i>jurassica</i> .....                            | 260, 262                                    |                                    |          |
| <i>longula</i> .....                              | 215, 216, 217                               |                                    |          |
| <i>quasacutata</i> <i>?</i> .....                 | 264                                         |                                    |          |
| <i>mutulata</i> .....                             | 217                                         |                                    |          |
| <i>antidiluvius</i> .....                         | 217                                         |                                    |          |
| <i>Echinia</i> <i>?</i> <i>laurela</i> .....      | 27                                          |                                    |          |
| <i>Echinolopata</i> .....                         | 100                                         |                                    |          |
| <i>peritubulata</i> .....                         | 220                                         |                                    |          |
| <i>Echinocheilus</i> .....                        | 105                                         |                                    |          |
| <i>Echinodermata</i> .....                        | 19, 24, 26, 23, 37, 40, 41,                 |                                    |          |
| 42, 43, 44, 54, 55, 56, 58, 59, 60, 61,           |                                             |                                    |          |
| 66, 68, 72, 77, 81, 84, 91, 94, 96, 118,          |                                             |                                    |          |
| 127, 130, 131, 133, 136, 138, 144, 147,           |                                             |                                    |          |
| 148, 149, 150, 151, 154, 156, 163, 165,           |                                             |                                    |          |
| 196, 206, 209, 210, 236, 255, 260, 261            |                                             |                                    |          |
| <i>Echinoidea</i> .....                           | 23, 42, 43, 44, 54, 60, 66                  |                                    |          |
| <i>Echinospherites</i> <i>?</i> .....             | 233                                         |                                    |          |
| <i>Echinus</i> .....                              | 204, 209, 210                               |                                    |          |
| <i>bullatus</i> .....                             | 210                                         |                                    |          |
| <i>inflatus</i> .....                             | 22                                          |                                    |          |
| <i>kerakensis</i> .....                           | 209                                         |                                    |          |
| <i>libanensis</i> .....                           | 210                                         |                                    |          |
| <i>syriacus</i> .....                             | 206                                         |                                    |          |
| <i>Edmondia</i> .....                             | 38, 45, 73, 86, 89, 100, 117, 178, 197,     |                                    |          |
| 226, 258                                          |                                             |                                    |          |
| <i>aspinwallensis</i> .....                       | 70, 73, 178                                 |                                    |          |
| <i>?</i> <i>calhouni</i> .....                    | 19, 30                                      |                                    |          |
| <i>burlingensis</i> .....                         | 117                                         |                                    |          |
| <i>?</i> <i>circularis</i> .....                  | 197                                         |                                    |          |
| <i>?</i> <i>glabra</i> .....                      | 73                                          |                                    |          |
| <i>medon</i> .....                                | 197                                         |                                    |          |
| <i>myrina</i> .....                               | 236                                         |                                    |          |
| <i>?</i> <i>nebrascensis</i> .....                | 73                                          |                                    |          |
| <i>ovata</i> .....                                | 87                                          |                                    |          |
| <i>peroblonga</i> .....                           | 38, 86                                      |                                    |          |
| <i>?</i> <i>pinonensis</i> .....                  | 109                                         |                                    |          |
| <i>reflexa</i> .....                              | 73                                          |                                    |          |
| <i>suborbiculata</i> .....                        | 258                                         |                                    |          |
| <i>subtruncata</i> .....                          | 73                                          |                                    |          |
| <i>tapesiformis</i> .....                         | 89                                          |                                    |          |
| <i>unioniformis</i> .....                         | 45                                          |                                    |          |
| <i>Edriocecinus</i> .....                         | 57                                          |                                    |          |
| <i>pocilliformis</i> .....                        | 57                                          |                                    |          |
| <i>Egeta</i> .....                                | 90                                          |                                    |          |
| <i>Egeria inflata</i> .....                       | 220                                         |                                    |          |
| <i>plana</i> .....                                | 229                                         |                                    |          |
| <i>Electroma</i> .....                            | 97                                          |                                    |          |
| <i>Endolobus</i> .....                            | 39, 45                                      |                                    |          |
| <i>Enclimatoceras</i> .....                       | 176, 239                                    |                                    |          |
| (Nautilus) <i>ulrichi</i> .....                   | 176                                         |                                    |          |
| <i>Encrinites</i> .....                           | 253                                         |                                    |          |
| <i>Encrinurus</i> .....                           | 186                                         |                                    |          |
| <i>trentonensis</i> .....                         | 186                                         |                                    |          |
| <i>varicosatus</i> .....                          | 186                                         |                                    |          |
| <i>Endoceras multitubulatum</i> .....             | 191                                         |                                    |          |
| <i>proteiforme</i> .....                          | 191                                         |                                    |          |
| <i>Endocostea</i> .....                           | 260, 263                                    |                                    |          |
| <i>sulcata</i> .....                              | 263                                         |                                    |          |
| <i>typica</i> .....                               | 260, 263                                    |                                    |          |
| <i>Endopachys maculurii</i> .....                 | 229                                         |                                    |          |
| <i>Entalis</i> .....                              | 101                                         |                                    |          |

|                                            | Page.                                    |                                                  | Page.                                    |
|--------------------------------------------|------------------------------------------|--------------------------------------------------|------------------------------------------|
| <i>Entalis paupercula</i> .....            | 101                                      | <i>Eunema f. salteri</i> .....                   | 25                                       |
| <i>Entolium</i> .....                      | 35, 73, 86, 89, 178                      | <i>Eunotia amphioxys</i> .....                   | 229                                      |
| <i>aviculatum</i> .....                    | 73, 86                                   | <i>argus</i> .....                               | 229                                      |
| <i>shumardianum</i> .....                  | 89                                       | <i>gibba</i> .....                               | 203, 229                                 |
| <i>Ensis curtus</i> .....                  | 50                                       | <i>gibberula</i> .....                           | 229                                      |
| <i>Entomostroma</i> .....                  | 36, 46, 61, 79, 89                       | <i>granulata</i> .....                           | 229                                      |
| <i>Eocidaris</i> .....                     | 72, 83                                   | <i>librile</i> .....                             | 203, 229                                 |
| <i>hallianus</i> .....                     | 52, 72                                   | <i>subulata</i> .....                            | 229                                      |
| <i>squamosa</i> .....                      | 63                                       | <i>textricula</i> .....                          | 229                                      |
| <i>f. squamosus</i> .....                  | 83                                       | <i>uncinata</i> .....                            | 229                                      |
| <i>Eocystites</i> .....                    | 198                                      | <i>webstermanni</i> .....                        | 229                                      |
| <i>primævus</i> .....                      | 198                                      | <i>zebra</i> .....                               | 229                                      |
| <i>Eoscorpius</i> .....                    | 53, 61                                   | <i>zebrina</i> .....                             | 229                                      |
| <i>carbonarius</i> .....                   | 61                                       | <i>Euomphalidæ</i> .....                         | 182                                      |
| <i>Ephithemia</i> .....                    | 203                                      | <i>Euomphalus</i> .....                          | 25, 30, 80, 117, 118, 130, 132, 138, 165 |
| <i>Eretmocrinus</i> .....                  | 41, 54                                   | 179, 195, 197, 235, 248                          |                                          |
| <i>Eridophyllum</i> .....                  | 155                                      | <i>ammon</i> .....                               | 117                                      |
| <i>strictum</i> .....                      | 155                                      | <i>decewi</i> .....                              | 80                                       |
| <i>Eriphyla</i> .....                      | 99                                       | <i>eurekaensis</i> .....                         | 195                                      |
| <i>gregaria</i> .....                      | 99                                       | <i>laxus</i> .....                               | 130, 235                                 |
| <i>Eriocrinus</i> .....                    | 35, 36, 37, 45, 63, 72, 82, 85, 150, 163 | <i>nichleranus</i> .....                         | 233                                      |
| <i>antiquus</i> .....                      | 63, 82                                   | ( <i>Omphalotrochus</i> ) <i>whitneyi</i> ...    | 30                                       |
| ( <i>Cerlocrinus</i> ) <i>planus</i> ..... | 163                                      | ( <i>Phanerotinus</i> ) <i>laxus</i> .....       | 195                                      |
| <i>inflexus</i> .....                      | 163                                      | <i>planodorsatus</i> .....                       | 25                                       |
| <i>conoides</i> .....                      | 37, 45                                   | <i>pernodosus</i> .....                          | 132                                      |
| <i>nebrascensis</i> .....                  | 35, 36                                   | ( <i>Raphistoma</i> ?) <i>rotuliformis</i> ...   | 65                                       |
| <i>planus</i> .....                        | 150                                      | <i>trochiscus</i> .....                          | 65                                       |
| <i>tuberculatus</i> .....                  | 37, 45                                   | <i>roberti</i> .....                             | 118                                      |
| <i>typus</i> .....                         | 35, 36, 45, 72, 85, 163                  | <i>rugosus</i> .....                             | 51, 87, 179                              |
| <i>whitei</i> .....                        | 82, 63                                   | <i>springvalensis</i> .....                      | 138, 165                                 |
| <i>tubulata</i> .....                      | 222                                      | ( <i>Straparollus</i> ) <i>ophirensis</i> .....  | 235                                      |
| <i>Eschara concentrica</i> .....           | 273                                      | <i>subrugosus</i> .....                          | 197                                      |
| <i>tuberculata</i> .....                   | 273                                      | <i>utahensis</i> .....                           | 235                                      |
| <i>Ethmophyllum</i> .....                  | 53                                       | <i>subplanus</i> .....                           | 232                                      |
| <i>whitneyi</i> .....                      | 53                                       | <i>umbilicatus</i> .....                         | 25                                       |
| <i>gracilis</i> .....                      | 53                                       | <i>Eupachycinus</i> .....                        | 72, 84, 85, 136, 163                     |
| <i>Etonia</i> .....                        | 57                                       | <i>boydii</i> .....                              | 64, 85                                   |
| <i>peculiaris</i> .....                    | 57                                       | <i>fayettensis</i> .....                         | 85                                       |
| <i>Eudiscoceras</i> .....                  | 110, 239                                 | <i>platybasia</i> .....                          | 136, 163                                 |
| <i>gabbi</i> .....                         | 110                                      | <i>tuberculatus</i> .....                        | 85                                       |
| <i>Eucalyptocrinus</i> .....               | 148                                      | <i>verrucosus</i> .....                          | 72                                       |
| <i>crassus</i> .....                       | 148                                      | <i>Euphoberia</i> .....                          | 53, 61                                   |
| <i>Euchellodon</i> .....                   | 237                                      | <i>armigera</i> .....                            | 53, 61                                   |
| <i>oreno-carinata</i> .....                | 237                                      | <i>major</i> .....                               | 53                                       |
| <i>Euconactæon</i> .....                   | 29                                       | <i>!!</i> .....                                  | 61                                       |
| <i>Eulina</i> .....                        | 25                                       | <i>Euproops</i> .....                            | 61, 179                                  |
| <i>aciculata</i> .....                     | 221                                      | <i>dane</i> .....                                | 61, 179                                  |
| <i>chrysalis</i> .....                     | 77                                       | <i>colletti</i> .....                            | 179                                      |
| <i>funicula</i> .....                      | 77                                       | <i>Euptycha</i> .....                            | 29                                       |
| <i>f. inconspicua</i> .....                | 77                                       | <i>Eurydesma</i> .....                           | 225                                      |
| <i>lugubris</i> .....                      | 221                                      | <i>cordata</i> f.....                            | 224, 225                                 |
| <i>notata</i> .....                        | 221                                      | <i>elliptica</i> .....                           | 224, 225                                 |
| <i>peracuta</i> .....                      | 25, 27                                   | <i>gibbosa</i> .....                             | 225                                      |
| <i>scale</i> .....                         | 221                                      | <i>globosa</i> .....                             | 224                                      |
| <i>f. subfusiformis</i> .....              | 255                                      | <i>sacculus</i> .....                            | 225                                      |
| <i>Eulimella</i> .....                     | 134, 144, 158                            | <i>Eurypteride</i> .....                         | 61, 187                                  |
| <i>funicula</i> .....                      | 134, 144                                 | <i>Eurypterus</i> .....                          | 61, 179                                  |
| <i>f. chrysalis</i> .....                  | 158                                      | ( <i>Anthraconetes</i> ) <i>masonensis</i> ..... | 53, 61,                                  |
| <i>f. inconspicua</i> .....                | 158                                      | 179                                              |                                          |
| <i>Eumicrotis</i> .....                    | 29, 32, 33, 45, 178, 236                 | <i>Euspira</i> .....                             | 143, 158                                 |
| <i>curta</i> .....                         | 32, 33, 49, 236                          | <i>coalvillensis</i> .....                       | 143                                      |
| <i>hawni</i> .....                         | 32, 178                                  | <i>utahensis</i> .....                           | 158                                      |
| <i>var. ovata</i> .....                    | 32                                       | <i>Eutomoceras</i> .....                         | 110, 239                                 |
| <i>sinuata</i> .....                       | 45                                       | <i>laubei</i> .....                              | 110                                      |
| <i>Eunema</i> .....                        | 25                                       | <i>Eutropia haleana</i> .....                    | 48                                       |

|                                                 | Page.                  |                                                | Page.                              |
|-------------------------------------------------|------------------------|------------------------------------------------|------------------------------------|
| <i>Cymella bella</i> .....                      | 101                    | <i>Cyrena securis</i> .....                    | 143                                |
| <i>meeki</i> .....                              | 268                    | ( <i>Veloritina</i> ) <i>durkeei</i> .....     | 135                                |
| <i>Cymomia lamarckii</i> .....                  | 222                    | <i>erecta</i> .....                            | 137                                |
| <i>Cyphaspis</i> .....                          | 148, 191               | <i>Cyrenidae</i> .....                         | 99, 105, 112, 115                  |
| ? <i>brevimarginatus</i> .....                  | 191                    | <i>Cyrtia</i> .....                            | 119                                |
| <i>christyi</i> .....                           | 148                    | <i>curvilineata</i> .....                      | 119                                |
| <i>Cyphosoma texanum</i> .....                  | 233                    | <i>Cyrtina</i> .....                           | 57, 58, 62, 118                    |
| <i>Cypricardella</i> .....                      | 117, 194, 197          | <i>bilingai</i> .....                          | 69                                 |
| <i>quadrata</i> .....                           | 117                    | <i>dalmanni</i> .....                          | 57                                 |
| <i>Cypricardia</i> .....                        | 225, 260, 262          | <i>dauidsoni</i> .....                         | 193                                |
| <i>acutifrons</i> .....                         | 225                    | <i>hamiltonensis</i> .....                     | 62, 119                            |
| <i>arcodes</i> .....                            | 225                    | <i>panda</i> .....                             | 69                                 |
| ( <i>Avicula</i> ?) <i>veneris</i> .....        | 226                    | <i>triquetra</i> .....                         | 5                                  |
| <i>imbricata</i> .....                          | 226                    | <i>Cyrtoceras</i> .....                        | 25, 46, 50, 91, 129, 133, 135, 204 |
| <i>occidentalis</i> .....                       | 232                    | ( <i>Aploceræ</i> ) <i>curtum</i> .....        | 4                                  |
| <i>pirarupta</i> .....                          | 226                    | <i>cessator</i> .....                          | 236                                |
| ? <i>rigida</i> .....                           | 117                    | <i>conicum</i> .....                           | 247                                |
| <i>rugulosa</i> .....                           | 224                    | <i>curtum</i> .....                            | 95, 7                              |
| <i>siliqua</i> .....                            | 226                    | <i>dardanus</i> .....                          | 11                                 |
| <i>simplex</i> .....                            | 226                    | <i>dictyum</i> .....                           | 139                                |
| <i>sinuosa</i> .....                            | 224                    | ? <i>dilatatum</i> .....                       | 95, 4                              |
| <i>Cypricardinia</i> .....                      | 90, 194                | <i>nevadense</i> .....                         | 195                                |
| <i>carbonaria</i> .....                         | 67, 90                 | <i>ohioense</i> .....                          | 67                                 |
| <i>indenta</i> .....                            | 194                    | <i>ohioensis</i> .....                         | 11                                 |
| <i>Cypricardites</i> .....                      | 54, 55, 79, 248        | <i>saeculum</i> .....                          | 59                                 |
| — ? .....                                       | 55                     | <i>Cyrtoceratites</i> .....                    | 11                                 |
| ? <i>carinata</i> .....                         | 79                     | <i>Cyrtochilin</i> .....                       | 116                                |
| <i>obliquus</i> .....                           | 55                     | <i>Cyrtolites</i> .....                        | 56, 79, 121, 191, 224              |
| <i>sterlingensis</i> .....                      | 79                     | ? <i>costatus</i> .....                        | 79                                 |
| <i>Cypridae</i> .....                           | 121                    | <i>dyeri</i> .....                             | 79                                 |
| <i>Cypridinidae</i> .....                       | 121, 136               | ? <i>gillmanus</i> .....                       | 191                                |
| <i>Cyprimeria</i> .....                         | 92, 93, 111, 269       | <i>imbricatius</i> .....                       | 56                                 |
| ? <i>crassa</i> .....                           | 93                     | ( <i>Microceras</i> ) <i>inornatus</i> .....   | 79                                 |
| <i>densata</i> .....                            | 269                    | <i>ornatus</i> .....                           | 79                                 |
| <i>depressa</i> .....                           | 269                    | <i>sinuatus</i> .....                          | 191, 234                           |
| <i>excavata</i> .....                           | 269                    | <i>Cysteophyllum</i> .....                     | 62, 155, 192, 222                  |
| <i>hellprini</i> .....                          | 269                    | <i>americanum</i> .....                        | 199                                |
| <i>spissa</i> .....                             | 269                    | <i>var. alticum</i> .....                      | 6                                  |
| <i>subulata</i> .....                           | 111                    | <i>vesiculosum</i> .....                       | 155                                |
| ? <i>tenuis</i> .....                           | 92                     | <i>Cystidea</i> .....                          | 37                                 |
| <i>Cyprina</i> .....                            | 99, 176                | <i>Cystoidea</i> .....                         | 54, 77                             |
| <i>arenaria</i> .....                           | 18, 47                 | <i>Cystoselrites</i> ? .....                   | 227                                |
| <i>compressa</i> .....                          | 18                     | <i>Cythere</i> .....                           | 74, 79, 121                        |
| <i>cordata</i> .....                            | 18                     | <i>cincinnatiensis</i> .....                   | 68, 79                             |
| ? <i>dallii</i> .....                           | 176                    | <i>nebrascensis</i> .....                      | 74                                 |
| <i>humilis</i> .....                            | 91, 47                 | <i>simplex</i> .....                           | 191                                |
| <i>laphami</i> .....                            | 48                     | <i>Cytherea</i> .....                          | 207, 211, 212, 216, 218, 219       |
| <i>ovata</i> .....                              | 18, 99                 | <i>deweyi</i> .....                            | 15, 48                             |
| <i>var. compressa</i> .....                     | 99                     | <i>lamarensis</i> .....                        | 44, 139                            |
| <i>subtumida</i> .....                          | 18, 48                 | <i>lenticularis</i> .....                      | 229                                |
| <i>Cyprinidae</i> .....                         | 260, 266, 268, 271     | <i>leonensis</i> .....                         | 48, 218                            |
| <i>Cypris</i> .....                             | 136                    | ? ( <i>Meretrix</i> ) <i>dariensis</i> ? ..... | 216                                |
| — ? .....                                       | 136                    | <i>missouriana</i> .....                       | 48, 215                            |
| <i>Cyrena</i> .....                             | 99, 125, 137, 143, 158 | <i>nebrascensis</i> .....                      | 15, 48                             |
| <i>arenaria</i> .....                           | 47                     | <i>nuttalli</i> .....                          | 219                                |
| <i>carletoni</i> .....                          | 76, 158, 167           | <i>orbiculata</i> .....                        | 13, 48                             |
| ( <i>Corbicula</i> ) <i>cytheriformis</i> ..... | 21                     | <i>oregonensis</i> .....                       | 59                                 |
| <i>durkeei</i> .....                            | 66                     | <i>ovata</i> .....                             | 229                                |
| <i>dakotensis</i> .....                         | 99, 167                | <i>owenana</i> .....                           | 16, 48                             |
| <i>holmesii</i> .....                           | 88                     | <i>parvula</i> .....                           | 231                                |
| <i>inflexa</i> .....                            | 143                    | <i>pellucida</i> .....                         | 16, 48                             |
| <i>intermedia</i> .....                         | 15                     | <i>syriaca</i> .....                           | 297                                |
| <i>moreauensis</i> .....                        | 15                     | <i>tenuis</i> .....                            | 13, 48                             |
| <i>occidentalis</i> .....                       | 15                     | <i>texana</i> .....                            | 48, 218                            |



|                                                  | Page.    |
|--------------------------------------------------|----------|
| <i>Fusus cooperi</i> .....                       | 221, 222 |
| <i>conybearii</i> .....                          | 222      |
| <i>constriatus</i> .....                         | 13       |
| <i>contortus</i> .....                           | 14       |
| <i>corpulentus</i> .....                         | 206      |
| <i>culbertsoni</i> .....                         | 14       |
| <i>dakotensis</i> .....                          | 14, 49   |
| <i>ellerii</i> .....                             | 209      |
| <i>flexuocostatus</i> .....                      | 14, 49   |
| <i>galpinianus</i> .....                         | 14       |
| <i>geniculus</i> .....                           | 206      |
| <i>haleanus</i> .....                            | 49       |
| <i>haydeni</i> .....                             | 236      |
| <i>intertextus</i> .....                         | 18, 49   |
| <i>mullicaensis</i> .....                        | 49       |
| <i>migrans</i> .....                             | 50       |
| <i>newberryi</i> .....                           | 14, 49   |
| <i>nebrascensis</i> .....                        | 256      |
| ( <i>Neptunea</i> ?) <i>gabbi</i> .....          | 76, 144  |
| <i>utahensis</i> .....                           | 76       |
| <i>oregonensis</i> .....                         | 50       |
| ( <i>Pleurotoma</i> ?) <i>scarboroughi</i> ..... | 18       |
| <i>remondii</i> .....                            | 221      |
| <i>scarboroughi</i> .....                        | 49       |
| (?) <i>Serrifusus</i> <i>dakotensis</i> .....    | 103      |
| <i>shumardi</i> .....                            | 264      |
| ( <i>Strepasidura</i> ) <i>marnochi</i> .....    | 237      |
| <i>subturritus</i> .....                         | 17       |
| <i>subturrites</i> .....                         | 49       |
| <i>taatii</i> .....                              | 222      |
| <i>tenuilineata</i> .....                        | 13       |
| <i>tenuilineatus</i> .....                       | 49       |
| <i>utahensis</i> .....                           | 159      |
| <i>vaughani</i> .....                            | 17, 49   |
| <i>vinculum</i> .....                            | 49       |

G.

|                                                                       |          |
|-----------------------------------------------------------------------|----------|
| <i>Gadus pusillus</i> .....                                           | 221      |
| <i>subcoarctatus</i> .....                                            | 221      |
| <i>Gafrarium liratum</i> .....                                        | 220      |
| <i>Galaxias</i> .....                                                 | 106      |
| <i>Galeodea</i> ( <i>Galeodaria</i> ) <i>quinquecostata</i> .....     | 222      |
| <i>Galerites oregonensis</i> .....                                    | 237      |
| <i>Galeropsis excentricus</i> .....                                   | 221      |
| <i>Galerus excentricus</i> .....                                      | 221      |
| <i>Gallionella</i> .....                                              | 203      |
| <i>crenaria</i> .....                                                 | 229      |
| <i>distans</i> ? .....                                                | 203, 229 |
| <i>granulata</i> .....                                                | 229      |
| <i>levis</i> .....                                                    | 229      |
| <i>punctata</i> .....                                                 | 229      |
| <i>undulata</i> .....                                                 | 229      |
| <i>varians</i> .....                                                  | 203      |
| <i>Gampsomyx</i> .....                                                | 53       |
| <i>limbratus</i> .....                                                | 61       |
| <i>Gasteropoda</i> .. 20, 21, 22, 24, 26, 28, 30, 31, 32, 34, 39, 40, |          |
| 42, 43, 44, 45, 56, 57, 59, 60, 63, 65, 67,                           |          |
| 68, 74, 79, 80, 84, 86, 89, 90, 91, 93, 94,                           |          |
| 95, 101, 105, 107, 108, 111, 112, 117,                                |          |
| 118, 121, 126, 127, 129, 130, 132, 133,                               |          |
| 134, 135, 136, 137, 138, 143, 147, 148,                               |          |
| 151, 153, 154, 155, 158, 159, 161, 164,                               |          |
| 165, 178, 191, 194, 197, 226, 232, 234,                               |          |
| 235, 236, 250, 256, 258, 261, 264, 273                                |          |
| <i>Gastrochena</i> .....                                              | 270      |

|                                                          |               |
|----------------------------------------------------------|---------------|
| <i>Gastrochena americana</i> .....                       | 270           |
| <i>Gastrochenida</i> .....                               | 260, 263, 270 |
| <i>Gastrocelli</i> .....                                 | 35            |
| <i>Gastrosiphites</i> .....                              | 35            |
| <i>Genota</i> .....                                      | 103           |
| <i>Geophila</i> .....                                    | 135           |
| <i>Gervillia</i> .. 28, 98, 119, 151, 158, 164, 259, 262 |               |
| ( <i>Avicula</i> ) <i>sulcata</i> .....                  | 51            |
| <i>gregaria</i> .....                                    | 159           |
| <i>longa</i> .....                                       | 51            |
| <i>montanaensis</i> .....                                | 164           |
| <i>mudgeana</i> .....                                    | 151, 158      |
| <i>parva</i> .....                                       | 51            |
| <i>recta</i> .....                                       | 28, 98, 262   |
| <i>sparsalirata</i> .....                                | 4 259         |
| <i>strigosa</i> .....                                    | 119           |
| <i>subtortuosa</i> .....                                 | 16, 98        |
| <i>Gervilliopsis</i> .....                               | 267           |
| <i>ensiformis</i> .....                                  | 267           |
| <i>minima</i> .....                                      | 267           |
| <i>Gilbertsocrinus</i> .....                             | 42, 63, 82    |
| <i>bursa</i> .....                                       | 42            |
| <i>calcaratus</i> .....                                  | 42            |
| ( <i>Goniasteroidocrinus</i> ) <i>fiscel-</i>            |               |
| <i>lus</i> .....                                         | 42            |
| ( <i>Goniasteroidocrinus</i> ) <i>ob-</i>                |               |
| <i>ovatus</i> .....                                      | 63, 82        |
| ( <i>Goniasteroidocrinus</i> ) <i>te-</i>                |               |
| <i>nuradiatus</i> .....                                  | 63, 82        |
| <i>Glæonema paradoxum</i> .....                          | 229           |
| <i>Glauconome</i> .. 72, 127, 131                        |               |
| <i>neroidis</i> .....                                    | 127, 131      |
| <i>trilineata</i> .....                                  | 72            |
| <i>Globiconcha</i> (?) <i>elevata</i> .....              | 255           |
| ( <i>Tylostoma</i> ) <i>tumida</i> .....                 | 255           |
| <i>Glossida</i> .....                                    | 99, 134       |
| <i>Glossopteris ampla</i> .....                          | 226           |
| <i>browniana</i> .....                                   | 226           |
| (?) <i>cordata</i> .....                                 | 226           |
| <i>elongata</i> .....                                    | 226           |
| <i>linearis</i> .....                                    | 226           |
| <i>phillipsii</i> .....                                  | 231           |
| <i>reticulum</i> .....                                   | 226           |
| <i>Glossus fraterna</i> .....                            | 50            |
| <i>markoei</i> .....                                     | 50            |
| <i>Glycimeria</i> .. 101, 143, 217                       |               |
| <i>berthoudi</i> .....                                   | 143           |
| <i>estrellanus</i> .....                                 | 50, 217       |
| <i>occidentalis</i> .....                                | 101           |
| <i>Glyptocrinus</i> .. 77, 187                           |               |
| <i>argutus</i> .....                                     | 187           |
| <i>baeri</i> .....                                       | 69, 77        |
| <i>decadactylus</i> .....                                | 77            |
| <i>dyeri</i> .....                                       | 68, 77        |
| <i>var. subglobosus</i> .....                            | 68, 77        |
| <i>nealli</i> .....                                      | 77            |
| <i>parvus</i> .....                                      | 77            |
| (?) <i>subnodosus</i> .....                              | 187           |
| <i>Gnathodon</i> .....                                   | 266           |
| (?) <i>tenuidens</i> .....                               | 266           |
| <i>Gnathostomata</i> .. 61, 179                          |               |
| <i>Gomphoceras</i> .. 39, 59, 195                        |               |
| ( <i>Aploceras</i> ) <i>turbiniforme</i> .....           | 39            |
| <i>sacculum</i> .....                                    | 39            |
| <i>suboviforme</i> .....                                 | 195           |

|                               | Page.                                |                                   | Page.                                         |
|-------------------------------|--------------------------------------|-----------------------------------|-----------------------------------------------|
| Gomphoceras turbiniforme..... | 59                                   | Grammatodon.....                  | 34, 82, 83                                    |
| Gomphonema clavatum ?.....    | 203                                  | inornatus.....                    | 34, 83                                        |
| gracile.....                  | 229                                  | ? vancouverensis.....             | 82                                            |
| herculaneum.....              | 229                                  | Grammostomum phyllodes.....       | 47                                            |
| longicolle.....               | 229                                  | Grammysia.....                    | 38, 59, 89, 194, 197                          |
| mamilla.....                  | 229                                  | arunata.....                      | 197                                           |
| minutissimum.....             | 203, 220                             | ? hannibalensis.....              | 89, 197                                       |
| olar.....                     | 229                                  | minor.....                        | 194                                           |
| Gomphonema oregonicum.....    | 229                                  | rhomboidalis.....                 | 38, 59                                        |
| Goniasteroidocrinus.....      | 42, 53, 63, 81, 82                   | rhomboides.....                   | 67, 89                                        |
| tuberosus.....                | 42                                   | ventricosa.....                   | 67, 89                                        |
| Goniattidae.....              | 110, 132                             | Granatocrinus.....                | 44, 60, 64, 83, 84, 126, 130, 147             |
| Goniattites.....              | 25, 46, 110, 117, 132, 149, 195, 236 | cornutus.....                     | 44                                            |
| compactus.....                | 38, 87                               | glaber.....                       | 64, 84                                        |
| desideratus.....              | 195                                  | granulosus.....                   | 8                                             |
| globulosus.....               | 25, 46                               | lotoblastus.....                  | 126, 130, 147                                 |
| var. excelsus.....            | 92                                   | melonoides.....                   | 64, 83                                        |
| goniobolus.....               | 110                                  | neglectus.....                    | 64, 83                                        |
| lowensis.....                 | 25, 46                               | norwoodi.....                     | 40, 60, 83                                    |
| kingii.....                   | 236                                  | pisum.....                        | 64, 83                                        |
| lyoni.....                    | 25, 42                               | projectus.....                    | 60                                            |
| oweni.....                    | 149                                  | shumardi.....                     | 40, 60                                        |
| opianus.....                  | 117                                  | Granoarca.....                    | 98                                            |
| Goniobasis.....               | 95, 106, 112, 135, 137, 141, 161     | Graphiocrinus.....                | 85                                            |
| arota.....                    | 95                                   | dactylus.....                     | 85                                            |
| ? arota.....                  | 221                                  | Graptolithus.....                 | 126, 129, 187                                 |
| chrysaloides.....             | 137, 161, 168                        | annectans.....                    | 187                                           |
| chrysalis.....                | 70, 161, 168                         | (Climacograptus) ramulus.....     | 126, 129                                      |
| cleburni.....                 | 137, 161, 167                        | (Diplograptus) hypniformis.....   | 126, 129                                      |
| convexa.....                  | 106, 161, 169                        | pistis.....                       | 129                                           |
| var. impressa.....            | 106, 169                             | quadrimumcronatus.....            | 126, 129                                      |
| endlichi.....                 | 141, 161, 168                        | Gratulopia ?.....                 | 212, 214                                      |
| fremontii.....                | 221                                  | maetropis.....                    | 212, 214                                      |
| gracilenta.....               | 106, 161, 169                        | Griffithides.....                 | 23, 198                                       |
| ? insculpta.....              | 77                                   | portlocki.....                    | 198                                           |
| invenusta.....                | 106, 161, 169                        | Gryphaea.....                     | 28, 30, 33, 97, 133, 172, 173, 208, 218, 233, |
| maclenta.....                 | 161, 168                             | 236, 245, 259, 262, 266, 270, 271 |                                               |
| nebrascensis.....             | 106, 135, 161, 169                   | bryani.....                       | 270                                           |
| nodulifera.....               | 70                                   | var. precedens.....               | 270                                           |
| ? nodulosa.....               | 221                                  | calceola.....                     | 95                                            |
| ? omitta.....                 | 106, 161, 169                        | var. nebrascensis.....            | 28, 33,                                       |
| simpseni.....                 | 95, 112                              | 172, 236, 262                     |                                               |
| ? simpseni.....               | 221                                  | capuloides.....                   | 208                                           |
| sublaevis.....                | 106, 161, 169, 221                   | dilatata.....                     | 241, 242                                      |
| ? subtertiosa.....            | 106, 161, 169, 221                   | var. tucumocarti.....             | 241, 243                                      |
| tenera.....                   | 135, 170                             | mucronata.....                    | 173                                           |
| ? tenera.....                 | 221                                  | mutabilis.....                    | 179                                           |
| tenuicarinata.....            | 106, 135, 162, 169                   | nebrascensis.....                 | 180                                           |
| ? tenuicarinata.....          | 221                                  | navis.....                        | 173                                           |
| Goniocasma.....               | 48, 101                              | pitcheri.....                     | 173, 219, 233, 241, 242, 243, 245,            |
| stimpsoni.....                | 48                                   | 253, 255                          |                                               |
| Goniocylindrites.....         | 29                                   | var.....                          | 133                                           |
| Goniomya.....                 | 92, 100, 164                         | navis.....                        | 233, 245                                      |
| americana.....                | 15, 100                              | sinuata var. americana.....       | 243                                           |
| borealis.....                 | 92                                   | thirae.....                       | 173                                           |
| montanaensis.....             | 164                                  | vesicularis.....                  | 97, 173, 208, 266, 270, 271                   |
| Goniophora.....               | 194                                  | vomere.....                       | 173                                           |
| perangulata.....              | 194                                  | Gryphostrea.....                  | 97, 270                                       |
| Gonostoma yatei.....          | 180                                  | vomere.....                       | 270                                           |
| Gorgoniidae.....              | 96                                   | Gryphorhynchus.....               | 29                                            |
| Gouldia.....                  | 268                                  | Gryphostrea eversa.....           | 220                                           |
| conradi.....                  | 268                                  | Gulnaris.....                     | 105                                           |
| decemmaria.....               | 268                                  | ? Gymnotoceras.....               | 110, 239                                      |
| declivis.....                 | 268                                  | blakei.....                       | 110, 239                                      |
| paralis.....                  | 268                                  | rotelliforme.....                 | 110, 239                                      |

|                                                | Page.              |
|------------------------------------------------|--------------------|
| <i>Gypidula</i> .....                          | 193                |
| <i>Gyrulus</i> .....                           | 34, 106, 153       |
| <i>Gyroceras</i> .....                         | 59, 63, 154        |
| <b>burlingtonensis</b> .....                   | <b>250</b>         |
| <b>constrictum</b> .....                       | <b>59</b>          |
| <b>cornutes</b> .....                          | <b>247</b>         |
| <b>elrodi</b> .....                            | <b>154</b>         |
| <b>logani</b> .....                            | <b>63</b>          |
| (Nautilus ?) <b>inelegans</b> .....            | <b>67</b>          |
| <b>rockfordensis</b> .....                     | <b>59</b>          |
| (Trochoceras ?) <b>ohioensis</b> .....         | <b>67</b>          |
| <i>Gyroceratites</i> .....                     | 81                 |
| (Nautilus) <b>inelegans</b> .....              | 81                 |
| ? (Trochoceras) <b>ohioensis</b> .....         | 81                 |
| <i>Gyrodes</i> .....                           | 102, 111           |
| <b>conradi</b> .....                           | 102                |
| <b>depressa</b> .....                          | <b>111</b>         |
| <i>Gyrorbis</i> .....                          | 35                 |
| <b>H.</b>                                      |                    |
| <i>Hadrophyllum</i> .....                      | 165                |
| <b>glans</b> .....                             | 165                |
| <i>Haliotidae</i> .....                        | 39                 |
| <i>Halobia</i> .....                           | 110                |
| (Daonella) <b>lommeli</b> .....                | 110                |
| <i>Halyaites</i> .....                         | 155                |
| <b>catenulata</b> .....                        | 155                |
| <i>Haminea</i> .....                           | 101, 264           |
| <b>minor</b> .....                             | 101                |
| <b>occidentalis</b> .....                      | 101                |
| <b>subcylindrica</b> .....                     | 101, 264           |
| <i>Hamites</i> <b>larvatus</b> .....           | 220                |
| <b>fremonti</b> .....                          | <b>243</b>         |
| <b>leai</b> .....                              | 49                 |
| <b>mortoni</b> .....                           | <b>14</b>          |
| <b>verneuilli</b> .....                        | 49                 |
| <i>Haplocaptha</i> .....                       | <b>222</b>         |
| (Cucullifera) <b>eccentrica</b> .....          | <b>222</b>         |
| <b>grandis</b> .....                           | <b>222</b>         |
| <i>Harpaga</i> <b>tippiana</b> .....           | 48                 |
| <i>Harpes</i> <b>escanabiae</b> .....          | <b>232</b>         |
| <i>Hartia</i> .....                            | <b>198</b>         |
| <b>matthewi</b> .....                          | <b>198</b>         |
| <i>Helcion</i> .....                           | 14                 |
| <b>alveolus</b> .....                          | <b>14</b>          |
| <b>carinatus</b> .....                         | <b>14</b>          |
| <b>patilliformis</b> .....                     | <b>14</b>          |
| <b>sexsulcatus</b> .....                       | <b>14</b>          |
| <b>subovatus</b> .....                         | <b>14</b>          |
| <i>Helcium</i> <b>alveolum</b> .....           | 21                 |
| <b>carinatum</b> .....                         | 21                 |
| <b>patelliforme</b> .....                      | 21                 |
| <b>sexsulcatum</b> .....                       | 21                 |
| <b>subovatum</b> .....                         | 21                 |
| <i>Helicorus</i> .....                         | <b>224, 227</b>    |
| <b>fuegiensis</b> .....                        | <b>224, 227</b>    |
| <i>Helicoides</i> .....                        | 106, 107, 135, 180 |
| <i>Helicoceras</i> .....                       | 104, 135, 261, 265 |
| ? <b>angulatum</b> .....                       | <b>21, 49</b>      |
| <b>tortus</b> .....                            | <b>18</b>          |
| <b>mortoni</b> var. <b>tenuicostatum</b> ..... | 104                |
| <b>pariense</b> .....                          | <b>135</b>         |
| <b>tenuicostatus</b> .....                     | <b>19</b>          |
| <b>stevensoni</b> .....                        | <b>261, 265</b>    |
| <i>Helicotoma</i> .....                        | 191                |
| <b>sp ?</b> .....                              | 191                |

|                                            | Page.                                      |
|--------------------------------------------|--------------------------------------------|
| <i>Helix</i> .....                         | 28, 106, 107, 135, 137, 141, 153, 161      |
| (Aglais) <b>fidelle</b> .....              | 180                                        |
| <b>evansi</b> .....                        | <b>21</b>                                  |
| <b>evanstonensis</b> .....                 | <b>141, 109</b>                            |
| <b>kanabensis</b> .....                    | <b>137, 169</b>                            |
| <b>leidyi</b> .....                        | <b>14, 107, 135, 170</b>                   |
| (Monodon ?) <b>dallii</b> .....            | 180                                        |
| <b>occidentalis</b> .....                  | <b>17</b>                                  |
| (Patula) <b>perspectiva</b> .....          | 180                                        |
| <b>sepulta</b> .....                       | <b>153</b>                                 |
| <b>peripheria</b> .....                    | <b>137, 170</b>                            |
| <b>riparia</b> .....                       | <b>137, 170</b>                            |
| ? <b>sepulta</b> .....                     | 169                                        |
| <b>spatiosa</b> .....                      | <b>28, 221</b>                             |
| <b>veterna</b> .....                       | <b>28, 170</b>                             |
| ? <b>veterna</b> .....                     | 107                                        |
| <b>vetusta</b> .....                       | 106, 161, 169                              |
| <b>vitrinoides</b> .....                   | <b>17</b>                                  |
| (Zonites) <b>marginicola</b> .....         | 170                                        |
| <i>Helicoceras</i> <b>tortum</b> .....     | <b>18, 49</b>                              |
| <i>Helicolites</i> .....                   | 155                                        |
| <b>elegans</b> .....                       | 155                                        |
| <i>Helisoma</i> .....                      | 34, 106                                    |
| <i>Helonix</i> <b>thalus</b> .....         | 50                                         |
| <i>Hemiaster</i> .....                     | 96                                         |
| <b>elegans</b> .....                       | <b>255</b>                                 |
| ? <b>humphreysanus</b> .....               | <b>18, 96</b>                              |
| <i>Hemicystites</i> .....                  | 78                                         |
| (Cystaster) <b>granulatus</b> .....        | 78                                         |
| <b>stellatus</b> .....                     | 78                                         |
| <i>Hemifusus</i> <b>horni</b> .....        | 221                                        |
| <i>Hemipronites</i> .....                  | 31, 56, 72, 78, 85, 89, 108, 109, 131, 177 |
| <b>chemungensis</b> var. <b>arctostri-</b> |                                            |
| <b>ata</b> .....                           | 108                                        |
| <b>crassus</b> .....                       | 31, 72, 85, 177                            |
| <b>crenistris</b> .....                    | 109, 131                                   |
| <b>subplanus</b> .....                     | 56                                         |
| <i>Hemitrypa</i> ? .....                   | 226                                        |
| <i>Hercoglossa</i> .....                   | 104                                        |
| <i>Heteractis</i> <b>ducosii</b> .....     | 220                                        |
| <i>Heteroceras</i> .....                   | 83, 104, 261, 265                          |
| ? <b>angulatum</b> .....                   | 49, 104                                    |
| <b>cheyennensis</b> .....                  | 49, 104                                    |
| ? <b>cochleatum</b> .....                  | 104                                        |
| <b>cooperi</b> .....                       | 93                                         |
| ? <b>nebrascense</b> .....                 | 104, 265                                   |
| <b>newtoni</b> .....                       | <b>261, 265</b>                            |
| <b>oweni</b> .....                         | 49                                         |
| <b>tortum</b> .....                        | 49, 104                                    |
| ? <b>umbilicatum</b> .....                 | 104                                        |
| <i>Heterocrinus</i> .....                  | 37, 55, 77                                 |
| (Anomalocrinus) <b>incurvus</b> .....      | <b>37</b>                                  |
| <b>crassus</b> .....                       | 91                                         |
| <b>constrictus</b> .....                   | 77                                         |
| <b>exilis</b> .....                        | 77                                         |
| <b>exiguus</b> .....                       | <b>68</b>                                  |
| <b>heterodactylus</b> .....                | 77                                         |
| (Iocrinus) <b>subcrassus</b> .....         | 77                                         |
| <b>juvenis</b> .....                       | 77                                         |
| <b>laxus</b> .....                         | 77                                         |
| <b>simplex</b> .....                       | 77                                         |
| <b>subcrassus</b> .....                    | <b>37, 55, 68</b>                          |
| <i>Heteromyaria</i> .....                  | 97, 263, 267                               |
| <i>Hettangia</i> .....                     | 263                                        |
| <b>americana</b> .....                     | <b>76</b>                                  |

|                                                                  | Page.         |
|------------------------------------------------------------------|---------------|
| <i>Eutropia perovata</i> .....                                   | 48            |
| <i>punctata</i> .....                                            | 48            |
| <i>Evastinopora</i> .....                                        | 38, 40, 60    |
| <i>grandis</i> .....                                             | 60            |
| <i>radiata</i> .....                                             | 38, 60        |
| <i>saxradiata</i> .....                                          | 60            |
| <i>Exogyra</i> ..... 94, 133, 142, 151, 158, 173, 206, 208, 215, |               |
| 219, 266                                                         |               |
| <i>aristina</i> .....                                            | 173, 219      |
| <i>aquila</i> .....                                              | 173           |
| <i>boussingaulti</i> .....                                       | 206           |
| <i>columbella</i> .....                                          | 93, 173       |
| <i>costata</i> .....                                             | 173, 219, 266 |
| <i>var.</i> .....                                                | 219           |
| <i>fluminis</i> .....                                            | 138           |
| <i>densata</i> .....                                             | 208           |
| <i>var.</i> .....                                                | 208           |
| <i>fimbriata</i> .....                                           | 173, 215, 219 |
| <i>flabellata</i> .....                                          | 243           |
| <i>forniculata</i> .....                                         | 151, 158, 173 |
| <i>fragosa</i> .....                                             | 173, 215, 219 |
| <i>interrupta</i> .....                                          | 173           |
| <i>læviscula</i> .....                                           | 133, 173, 219 |
| <i>matheroniana</i> .....                                        | 173, 219      |
| <i>parasitica</i> .....                                          | 173           |
| <i>plicata</i> .....                                             | 173           |
| <i>ponderosa</i> .....                                           | 133, 173, 255 |
| <i>texana</i> .....                                              | 173, 255      |
| <i>walkeri</i> .....                                             | 149           |
| <i>walkeri</i> .....                                             | 173           |
| <i>winchelli</i> .....                                           | 151, 158, 173 |
| F.                                                               |               |
| <i>Fabulina</i> .....                                            | 100           |
| <i>Fasciolaridae</i> .....                                       | 103, 264      |
| <i>Fasciolaria</i> .....                                         | 103, 159, 264 |
| <i>buccinoides</i> .....                                         | 14, 103       |
| <i>cretacea</i> .....                                            | 14            |
| ? ( <i>Cryptorhynchus</i> ) <i>cheyennensis</i> ....             | 103           |
| <i>contorta</i> .....                                            | 264           |
| <i>flexicostata</i> .....                                        | 103           |
| <i>fusiformis</i> .....                                          | 264           |
| ( <i>Mesorhynchus</i> ) <i>gracilentia</i> .....                 | 103           |
| <i>moorei</i> .....                                              | 221           |
| ( <i>Pleurochellus</i> ) <i>alleni</i> .....                     | 159           |
| <i>cretacea</i> .....                                            | 103           |
| <i>coulbertsoni</i> .....                                        | 103, 264      |
| <i>galpiniana</i> .....                                          | 103           |
| <i>scarborongi</i> .....                                         | 103           |
| <i>plicata</i> .....                                             | 221           |
| <i>Faviphyllum</i> ? <i>rugosum</i> .....                        | 239           |
| <i>Favistella</i> .....                                          | 130, 155      |
| <i>stellata</i> .....                                            | 130, 155      |
| <i>Favositidae</i> .....                                         | 62, 108, 109  |
| <i>Favosites</i> ..... 36, 62, 108, 117, 126, 130, 148, 155, 156 |               |
| — (f).....                                                       | 156, 199      |
| <i>basaltica</i> .....                                           | 156, 192      |
| <i>divergens</i> .....                                           | 130           |
| <i>faveus</i> .....                                              | 155           |
| <i>hemispherica</i> .....                                        | 192           |
| <i>maxima</i> ?.....                                             | 247           |
| <i>polymorpha</i> .....                                          | 62, 156, 247  |
| <i>var.</i> .....                                                | 108           |
| <i>dubia</i> .....                                               | 156           |
| <i>ramosa</i> .....                                              | 247           |

|                                    | Page                                      |
|------------------------------------|-------------------------------------------|
| Favosites [whitfieldi] .....       | 117                                       |
| whitfieldi .....                   | 114                                       |
| Fenestella .....                   | 60, 72, 88, 226, 253                      |
| — ? .....                          | 72                                        |
| ample .....                        | 226                                       |
| corticata .....                    | 273                                       |
| delicata .....                     | 67, 88                                    |
| foesula .....                      | 226                                       |
| gracilis .....                     | 226                                       |
| intermedia .....                   | 273                                       |
| internata .....                    | 226                                       |
| media .....                        | 226                                       |
| (Multiporata?) var. lodiensis .... | 88                                        |
| norwoodiana .....                  | 273                                       |
| popeana .....                      | 257, 273                                  |
| shumardii .....                    | 72, 273                                   |
| subretiformis .....                | 273                                       |
| (Lypopora) retrocra .....          | 60                                        |
| trituberculata .....               | 27                                        |
| variabilis .....                   | 27                                        |
| Ficopsis cooperi .....             | 221                                       |
| mammillatus .....                  | 221                                       |
| penitus .....                      | 221                                       |
| remondii .....                     | 221                                       |
| Ficus mammillatus .....            | 221                                       |
| modestus .....                     | 221                                       |
| [?] ocoyanus .....                 | 221                                       |
| Fishes .....                       | 221                                       |
| Fissurella .....                   | 38, 212, 221                              |
| crenulata .....                    | 212, 221                                  |
| Fistulipora .....                  | 71, 156, 221                              |
| canadensis .....                   | 221                                       |
| nodulifera .....                   | 221                                       |
| Fiabellata .....                   | 221                                       |
| cuneiforme .....                   | 221                                       |
| Foraminifera .....                 | 19, 29, 81, 64, 71, 85, 91, 177, 256, 257 |
| Forbesocrinus .....                | 22, 26, 37, 44, 60                        |
| agaasiki var. giganteus .....      | 26, 60                                    |
| ? norwoodi .....                   | 23                                        |
| monroensis .....                   | 26                                        |
| wortheni .....                     | 8                                         |
| ? semiovatus .....                 | 23                                        |
| Fragillaria .....                  | 22                                        |
| acuta .....                        | 22                                        |
| amphicephala .....                 | 22                                        |
| rhabdosoma ? .....                 | 203, 22                                   |
| Fragum .....                       | 226                                       |
| tenuistriatum .....                | 226                                       |
| Fulvia .....                       | 226                                       |
| tenuis .....                       | 226                                       |
| Fungidae .....                     | 22, 96                                    |
| Fusulina .....                     | 29, 81, 71, 85, 131, 177, 245             |
| cylindrica .....                   | 19, 29, 81, 71, 131, 177, 245             |
| var. ventricosa .....              | 19                                        |
| elongata .....                     | 23, 257                                   |
| gracilis .....                     | 29, 25, 87                                |
| robusta .....                      | 29                                        |
| ventricosa .....                   | 25, 87                                    |
| Fusimitra ? lineata .....          | 221                                       |
| ? minima .....                     | 221                                       |
| Fusispira .....                    | 221                                       |
| compacta .....                     | 234                                       |
| Fusus .....                        | 103, 144, 150, 209, 237, 264              |
| arctatus .....                     | 50                                        |
| chevrenensis .....                 | 261, 264                                  |



|                                       | Page.                  |                                              | Page.                               |
|---------------------------------------|------------------------|----------------------------------------------|-------------------------------------|
| <i>Inoceramus perovialis</i> .....    | 267                    |                                              |                                     |
| <i>perplexus</i> .....                | 260, 263               | <i>L.</i>                                    |                                     |
| <i>portensis</i> .....                | 16                     | <i>Lacinia</i> .....                         | 219                                 |
| <i>problematicus</i> .....            | 95, 111, 133, 245, 273 | <i>Lacunaria alabamensis</i> .....           | 231                                 |
| <i>problematicus?</i> .....           | 263                    | <i>erecta</i> .....                          | 231                                 |
| <i>pro-obliqua</i> .....              | 267                    | <i>Lamellibranchiata</i> .....               | 20, 26, 27, 28, 29, 30, 32, 33, 38, |
| <i>pseudo-mytiloides</i> .....        | 258                    |                                              | 40, 41, 42, 43, 44, 54, 55, 58,     |
| <i>rectangulus</i> .....              | 30                     |                                              | 58, 59, 61, 64, 66, 68, 73, 79,     |
| <i>sagensis</i> .....                 | 250, 263, 267, 274     |                                              | 80, 84, 86, 89, 90, 91, 92, 93,     |
| <i>var. quadrans</i> .....            | 267                    |                                              | 94, 95, 97, 105, 108, 110,          |
| <i>simpsoni</i> .....                 | 99, 95, 111, 263       |                                              | 112, 148, 149, 190, 194, 196,       |
| <i>subcompresus</i> .....             | 21                     |                                              | 235, 236, 260, 262, 263, 271        |
| <i>sublevis</i> .....                 | 13, 263                | <i>Lamellopora</i> .....                     | 247                                 |
| <i>subundatus</i> .....               | 27                     | <i>infundibularia</i> .....                  | 247                                 |
| <i>sulcatus</i> .....                 | 47                     | <i>Lamna texana</i> .....                    | 246                                 |
| <i>syriacus</i> .....                 | 209                    | <i>Lamprodoma elongata</i> .....             | 222                                 |
| <i>tenuilineatus</i> .....            | 13, 263, 274           | <i>phillipsi</i> .....                       | 222                                 |
| <i>tenuirostriatus</i> .....          | 29                     | <i>Lampella</i> .....                        | 105                                 |
| <i>texanus</i> .....                  | 218                    | <i>Lapparia mooreana</i> .....               | 221                                 |
| <i>umbonatus</i> .....                | 18                     | <i>Latia dallii</i> .....                    | 166, 170                            |
| <i>undabundus</i> .....               | 29                     | <i>Latirca</i> .....                         | 98                                  |
| <i>vancouverensis</i> .....           | 256                    | <i>ononcheila</i> .....                      | 230                                 |
| <i>vanuxemi</i> .....                 | 21, 263                | <i>transversa</i> .....                      | 220                                 |
| <i>ventricosus</i> .....              | 15                     | <i>Latirus (Poraisternia) plicatus</i> ..... | 221                                 |
| <i>(Volvicceramus) exogyroides</i> .. | 97                     | <i>Lesia</i> .....                           | 61, 179                             |
| <i>umbonatus</i> .....                | 97                     | <i>tricarinata</i> .....                     | 61, 179                             |
| <i>Inoperculata</i> .....             | 34                     | <i>Lecythioerinus</i> .....                  | 150, 163                            |
| <i>Insecta</i> .....                  | 37, 47                 | <i>olliculaeformis</i> .....                 | 150, 163                            |
| <i>Integripallia</i> .....            | 266, 268               | <i>Leda</i> .....                            | 24, 25, 28, 116                     |
| <i>Integropallia</i> .....            | 263                    | <i>barrisi</i> .....                         | 116                                 |
| <i>Iorinus</i> .....                  | 188                    | <i>bellistriata</i> .....                    | 61                                  |
| <i>trentonensis</i> .....             | 188                    | <i>bisulcata</i> .....                       | 28, 47                              |
| <i>Iphidea (H) sculptilis</i> .....   | 76                     | <i>compes</i> .....                          | 220                                 |
| <i>Iridae</i> .....                   | 105                    | <i>curta</i> .....                           | 26                                  |
| <i>Isocardia</i> .....                | 205, 207, 270          | <i>fibrosa</i> .....                         | 48, 256                             |
| <i>conradi</i> .....                  | 270                    | <i>longifrons</i> .....                      | 47                                  |
| <i>crenulata</i> .....                | 207                    | <i>(Nucula) subcutila</i> .....              | 19                                  |
| <i>fraterna</i> .....                 | 50                     | <i>oregona</i> .....                         | 49, 220, 256                        |
| <i>! hodgei</i> .....                 | 68                     | <i>pinniformis</i> .....                     | 47                                  |
| <i>markoi</i> .....                   | 50, 205                | <i>protexta</i> .....                        | 47                                  |
| <i>washita</i> .....                  | 243                    | <i>slackiana</i> .....                       | 47                                  |
| <i>Isocardiidae</i> .....             | 270                    | <i>subangulata</i> .....                     | 47                                  |
| <i>Isochilina</i> .....               | 188                    | <i>subcutila</i> .....                       | 20                                  |
| <i>Isochordae</i> .....               | 107                    | <i>willamettensis</i> .....                  | 49, 256                             |
| <i>Isochaemon</i> .....               | 20, 32                 | <i>(Yoldia) levistriata</i> .....            | 24                                  |
| <i>Isonema</i> .....                  | 39, 150                | <i>Legumen</i> .....                         | 270                                 |
| <i>depressa</i> .....                 | 59                     | <i>apressum</i> .....                        | 270                                 |
| <i>humilis</i> .....                  | 67                     | <i>planulatum</i> .....                      | 270                                 |
| <i>Isoleurus curviliratus</i> .....   | 48                     | <i>Leiopietha</i> .....                      | 127, 134, 264, 268                  |
| <i>meekianus</i> .....                | 48                     | <i>(Cymella) meeki</i> .....                 | 264                                 |
| <i>Isopoda</i> .....                  | 36, 46, 61, 179        | <i>undata</i> .....                          | 101, 134                            |
| <i>J.</i>                             |                        | <i>elegantula</i> .....                      | 268                                 |
| <i>Janira</i> .....                   | 209, 215, 216          | <i>inflata</i> .....                         | 268                                 |
| <i>affinis</i> .....                  | 49                     | <i>protexta</i> .....                        | 268                                 |
| <i>bella</i> .....                    | 49, 215, 216           | <i>(Psilomya) meekii</i> .....               | 127, 134                            |
| <i>syriaca</i> .....                  | 209                    | <i>Leioplax</i> .....                        | 138                                 |
| <i>Jeanpaulia radiata</i> .....       | 246                    | <i>turricula</i> .....                       | 138                                 |
| <i>K.</i>                             |                        | <i>Leiopteria</i> .....                      | 194                                 |
| <i>Kutorgina</i> .....                | 189, 234               | <i>radnesquii</i> .....                      | 194                                 |
| <i>minutissima</i> .....              | 234                    | <i>Leiorynchus</i> .....                     | 109, 193                            |
| <i>prospectensis</i> .....            | 189                    | <i>quadricostatus</i> .....                  | 109                                 |
| <i>sculptilis</i> .....               | 189                    | <i>Lepacrinotus</i> .....                    | 77                                  |
| <i>whitfieldi</i> .....               | 189                    | <i>moorei</i> .....                          | 77                                  |
|                                       |                        | <i>Leperditia</i> .....                      | 80, 126, 129, 188, 191, 195         |
|                                       |                        | <i>alta</i> .....                            | 80                                  |
|                                       |                        | <i>bivia</i> .....                           | 126, 129, 191                       |

|                                      | Page.                               |                                   | Page.                                                                              |
|--------------------------------------|-------------------------------------|-----------------------------------|------------------------------------------------------------------------------------|
| Leperditia (Isocbilina) armata ..... | 158                                 | Limnæa (Polyrhytis) similis ..... | 22, 95, 112, 170                                                                   |
| rotundata .....                      | 195                                 | tenuicosta .....                  | 16, 221                                                                            |
| Lepideasthes .....                   | 60, 144, 154, 165                   | vetusta .....                     | 22, 95, 170                                                                        |
| colletti .....                       | 144, 154, 165                       | Limnæidae .....                   | 34, 105, 107, 112, 115                                                             |
| Lepideasthes corroyi .....           | 60                                  | Limnæinæ .....                    | 34                                                                                 |
| Lepidocentrus .....                  | 63                                  | Limnophila .....                  | 34                                                                                 |
| irregularis .....                    | 63                                  | Limnophysa .....                  | 106                                                                                |
| Lepidoptera .....                    | 37, 47                              | Limopsis .....                    | 98                                                                                 |
| Lepocrinites moorei .....            | 66                                  | ellipsa .....                     | 220                                                                                |
| Leptæna .....                        | 57, 78, 130, 180, 234               | nitens .....                      | 50                                                                                 |
| melita .....                         | 189, 234                            | parvula .....                     | 93                                                                                 |
| ? nucleata .....                     | 57                                  | pectuncularis .....               | 220                                                                                |
| sericea .....                        | 78, 130                             | striato-punctatus .....           | 255                                                                                |
| trilobata .....                      | 250                                 | Limoptera .....                   | 194                                                                                |
| Leptæsthes .....                     | 90, 105, 141, 160                   | sarmenticia .....                 | 194                                                                                |
| Leptocælia .....                     | 57                                  | Linearia .....                    | 100, 200                                                                           |
| flabellites .....                    | 57                                  | cancellata-sculpta .....          | 48                                                                                 |
| Leptocardia .....                    | 90, 100, 236                        | contracta .....                   | 200                                                                                |
| carditoidea .....                    | 236                                 | ? formosa .....                   | 100                                                                                |
| typica .....                         | 236                                 | irradians .....                   | 48                                                                                 |
| Leptodesma .....                     | 194, 196                            | metastrata .....                  | 200                                                                                |
| — ? .....                            | 196                                 | Lingula .....                     | 28, 33, 55, 58, 62, 72, 85, 89, 96, 119, 126,<br>129, 133, 177, 180, 192, 198, 202 |
| transversa .....                     | 194                                 | alba-pinensis .....               | 199                                                                                |
| Leptodomus granosus .....            | 20                                  | ampla .....                       | 350                                                                                |
| Leptolimnæa .....                    | 106, 153                            | antiqua .....                     | 221                                                                                |
| Leptopora .....                      | 147, 163                            | brevirostris .....                | 18, 33, 202                                                                        |
| winchelli .....                      | 147, 163                            | ? dawsoni .....                   | 196                                                                                |
| Leptosolen .....                     | 101, 270                            | halli .....                       | 119                                                                                |
| conradi .....                        | 70, 101                             | lowensis .....                    | 247                                                                                |
| Leucochella .....                    | 159                                 | lena .....                        | 182                                                                                |
| Lichas .....                         | 39, 55, 91                          | ligea .....                       | 182                                                                                |
| boltoni .....                        | 91                                  | var. nevadensis .....             | 193                                                                                |
| cucullus .....                       | 39, 55                              | (Lingulella) membranacea .....    | 8                                                                                  |
| Lichenocrinus .....                  | 66, 69, 77                          | lonensis .....                    | 193                                                                                |
| crateriformis .....                  | 78                                  | ? manticula .....                 | 126, 129, 180                                                                      |
| dyeri .....                          | 77                                  | melie .....                       | 8                                                                                  |
| Lima .....                           | 30, 73, 86, 110, 133, 178, 218, 236 | minuta .....                      | 63                                                                                 |
| acutilineata .....                   | 47                                  | mytiloides .....                  | 85                                                                                 |
| ? cuneata .....                      | 30                                  | nitida .....                      | 23, 86                                                                             |
| denticulata .....                    | 47                                  | ovata .....                       | 223, 125                                                                           |
| lowensis .....                       | 218                                 | pinnaformis .....                 | 250                                                                                |
| (Limatula) erecta .....              | 110                                 | prima .....                       | 221                                                                                |
| pelagica .....                       | 47                                  | quadrata .....                    | 55                                                                                 |
| (? Plagiomtoma) occidentalis .....   | 236                                 | scotica .....                     | 8                                                                                  |
| pectunculata .....                   | 30                                  | var. nebrascensis .....           | 71                                                                                 |
| retifera .....                       | 52, 78, 86, 178                     | subspatulata .....                | 13, 53                                                                             |
| ? minuta .....                       | 30                                  | umbonata .....                    | 177                                                                                |
| aquanina .....                       | 47                                  | whitei .....                      | 199                                                                                |
| waccanula .....                      | 133, 218                            | Lingulella davisi .....           | 66                                                                                 |
| Limulidæ .....                       | 30, 110, 133                        | lamborni .....                    | 66                                                                                 |
| Limulus .....                        | 105, 107, 112, 153, 161             | Lingulepis .....                  | 31, 180, 223, 224, 261                                                             |
| (Arcella) haldemani .....            | 168                                 | cuneolus .....                    | 200, 261                                                                           |
| ? compactilis .....                  | 109                                 | dakotensis .....                  | 261                                                                                |
| (Lepidolimnæa) minuscula .....       | 153                                 | ella .....                        | 234                                                                                |
| (Limnophysa ?) compactilis .....     | 77                                  | mora .....                        | 180, 233                                                                           |
| nitidula .....                       | 112, 168                            | ? minuta .....                    | 180, 234                                                                           |
| vetusta .....                        | 112                                 | perattenuatus .....               | 200, 261                                                                           |
| moekiana .....                       | 107                                 | pinnaformis .....                 | 261                                                                                |
| moekii .....                         | 170                                 | pinnaformis .....                 | 31, 66                                                                             |
| minuscula .....                      | 170                                 | prima .....                       | 31                                                                                 |
| nitidula .....                       | 95, 161, 221                        | primaformis .....                 | 250                                                                                |
| (? Lepidolimnæa) tenuicostata .....  | 106, 161,<br>169, 221               | Lingulidæ .....                   | 31, 33, 62, 96, 123, 261, 263                                                      |
| (Polyrhytis) kingii .....            | 112, 170                            | Limnæsonia .....                  | 190                                                                                |
| shuwardi .....                       | 107, 170                            | sagittalis .....                  | 190                                                                                |

|                                                | Page                            |
|------------------------------------------------|---------------------------------|
| <i>arasonia transversa</i> .....               | 199                             |
| <i>istha</i> .....                             | 47, 101, 261                    |
| ( <i>Cymella</i> ) <i>meeki</i> .....          | <b>261</b>                      |
| <i>protexta</i> .....                          | 101                             |
| <i>lacodes</i> .....                           | 35, 49                          |
| <i>veterna</i> .....                           | 49                              |
| <i>veternus</i> .....                          | 35, 107                         |
| <i>oedethes</i> .....                          | <b>134</b> , 158                |
| <i>lingulifera</i> .....                       | <b>134</b>                      |
| <i>nuptialis</i> .....                         | 134                             |
| <i>?obscurata</i> .....                        | <b>158</b>                      |
| <i>asia antiqua</i> .....                      | 166, 170                        |
| <i>edendron lineata</i> .....                  | 49                              |
| <i>odomus</i> .....                            | 38, 208, 210, 267               |
| <i>affinis</i> .....                           | 267                             |
| <i>cretacea</i> .....                          | <b>208</b>                      |
| <i>ripleyana</i> .....                         | 267                             |
| <i>stamineus</i> .....                         | <b>210</b>                      |
| <i>odontium furcatum</i> .....                 | 229                             |
| <i>nasutum</i> .....                           | 229                             |
| <i>scorpius</i> .....                          | 229                             |
| <i>ophaga</i> .....                            | 38, 61                          |
| <i>lingualis</i> .....                         | 38, 61                          |
| <i>?pertenuis</i> .....                        | <b>38</b> , 84                  |
| <i>ostrotron</i> .....                         | 30, 109, 131, 149, 156, 165     |
| <i>— ?</i> .....                               | 30, 232                         |
| <i>?californiense</i> .....                    | <b>30</b>                       |
| <i>canadense</i> .....                         | 149                             |
| <i>mamillare</i> .....                         | 30, 149, 156, 165               |
| <i>microstylum</i> .....                       | <b>165</b>                      |
| <i>whitneyi</i> .....                          | 109, 181                        |
| <i>ostylidium</i> .....                        | 229                             |
| <i>amphiodon</i> .....                         | 229                             |
| <i>crenulatam</i> .....                        | 229                             |
| <i>laeve</i> .....                             | 229                             |
| <i>quadratum</i> .....                         | 229                             |
| <i>rude</i> .....                              | 229                             |
| <i>trabecula</i> .....                         | 229                             |
| <i>rina</i> .....                              | 212, 214                        |
| <i>pedroana</i> .....                          | <b>212</b> , 214                |
| <i>rinidae</i> .....                           | 103                             |
| <i>ites</i> .....                              | 80, 91                          |
| <i>grafftonensis</i> .....                     | <b>63</b> , 91                  |
| <i>?ortoni</i> .....                           | 80                              |
| <i>inellus</i> .....                           | 234, 260, 261                   |
| <i>hocephalus</i> .....                        | <b>250</b>                      |
| <i>chippewäensis</i> .....                     | <b>250</b>                      |
| <i>hamulus</i> .....                           | <b>250</b>                      |
| <i>nophyllum</i> .....                         | 72, 85, 117, 131, 138, 165, 177 |
| <i>calceola</i> .....                          | <b>117</b>                      |
| <i>expansum</i> .....                          | <b>138</b> , 165                |
| <i>proliferum</i> .....                        | 72, 85, 131, 177                |
| <i>nema</i> .....                              | 25, 27, 46, 86, 152, 195, 197   |
| <i>— ?</i> .....                               | 195                             |
| <i>approximatum</i> .....                      | <b>195</b>                      |
| <i>attenuata</i> var. <i>semicostata</i> ..... | 67                              |
| <i>bella</i> .....                             | <b>197</b>                      |
| <i>cerithiiformis</i> .....                    | <b>25</b> , 46                  |
| <i>eurekaensis</i> .....                       | <b>195</b>                      |
| <i>inornata</i> .....                          | <b>25</b>                       |
| <i>kanei</i> .....                             | <b>36</b>                       |
| <i>multicostata</i> .....                      | <b>27</b> , 46                  |
| <i>nitidula</i> .....                          | <b>25</b>                       |
| <i>nobile</i> .....                            | <b>195</b>                      |
| <i>rugosa</i> .....                            | <b>25</b> , 46, 152             |

|                                                         | Page                                 |
|---------------------------------------------------------|--------------------------------------|
| <i>Loxonema scitula</i> .....                           | <b>25</b> , 46                       |
| <i>semicostata</i> .....                                | 86                                   |
| <i>?subattenuatum</i> .....                             | 195                                  |
| <i>Lucina</i> .....                                     | 80, 99, 134, 153, 207, 263, 264, 268 |
| <i>acutilineata</i> .....                               | <b>206</b>                           |
| <i>eleburni</i> .....                                   | <b>157</b>                           |
| <i>cretacea</i> .....                                   | 268                                  |
| ( <i>Diplodonta</i> ?) <i>subundata</i> .....           | 263                                  |
| <i>fibrosa</i> .....                                    | <b>256</b>                           |
| <i>gyrata</i> .....                                     | 220                                  |
| <i>lirata</i> .....                                     | 80                                   |
| <i>occidentalis</i> .....                               | <b>16</b> , 50, 99, 263              |
| var. <i>vent-</i>                                       |                                      |
| <i>ricosa</i> .....                                     | 99                                   |
| ( <i>Paracyclas</i> ) <i>ohioensis</i> .....            | <b>66</b> , 80                       |
| <i>permacra</i> .....                                   | 50                                   |
| <i>profunda</i> .....                                   | <b>153</b> , 157                     |
| <i>safedensis</i> .....                                 | <b>209</b>                           |
| <i>smockana</i> .....                                   | <b>266</b>                           |
| <i>subtruncata</i> .....                                | <b>207</b>                           |
| <i>subundata</i> .....                                  | <b>13</b> , 99, 134                  |
| <i>syriaca</i> .....                                    | <b>207</b>                           |
| <i>ventricosa</i> .....                                 | 263                                  |
| <i>Lucinidae</i> .....                                  | 30, 99, 110, 134, 263, 268           |
| <i>Lunatia</i> .....                                    | 102, 137, 264                        |
| <i>?acutispira</i> .....                                | 48                                   |
| <i>concinna</i> .....                                   | 102, 264                             |
| <i>minima</i> .....                                     | 221                                  |
| <i>occidentalis</i> .....                               | 102                                  |
| <i>subcrassa</i> .....                                  | 102                                  |
| <i>utahensis</i> .....                                  | <b>137</b>                           |
| <i>Lunulicardium</i> .....                              | 235                                  |
| <i>fragosum</i> .....                                   | 235                                  |
| <i>Lunulites</i> .....                                  | 220                                  |
| <i>bonei</i> .....                                      | 220                                  |
| <i>?dactiloides</i> .....                               | <b>247</b>                           |
| <i>duccosii</i> .....                                   | 220                                  |
| <i>interstitia</i> .....                                | 220                                  |
| <i>Lutraria</i> .....                                   | 211, 213, 215, 217                   |
| <i>transmontana</i> .....                               | <b>215</b>                           |
| <i>trachel</i> .....                                    | 213                                  |
| <i>Lyellia</i> .....                                    | 155                                  |
| <i>americana</i> .....                                  | 155                                  |
| <i>Lyonsia</i> ( <i>Panopaea</i> ) <i>concaua</i> ..... | <b>19</b>                            |
| <i>Lyopomata</i> .....                                  | 96, 133                              |
| <i>Lyosoma</i> .....                                    | <b>164</b>                           |
| <i>powelli</i> .....                                    | 164, 179                             |
| <i>Lyropora</i> .....                                   | 60                                   |
| <b>M.</b>                                               |                                      |
| <i>Maclurea</i> .....                                   | 130, 191, 234                        |
| <i>— (?)</i> .....                                      | 130, 191                             |
| <i>annulata</i> .....                                   | <b>191</b>                           |
| <i>carinata</i> .....                                   | <b>191</b>                           |
| <i>minima</i> .....                                     | <b>234</b>                           |
| <i>subannulata</i> .....                                | <b>191</b>                           |
| <i>Macrocallista</i> .....                              | 100                                  |
| <i>Macrocheilidae</i> .....                             | 132                                  |
| <i>Macrocheilus</i> .....                               | 25, 46, 74, 86, 90, 127, 132, 197    |
| <i>— ?</i> .....                                        | <b>46</b> , 197                      |
| <i>altonensis</i> .....                                 | 86                                   |
| <i>angulifera</i> .....                                 | <b>127</b> , 132                     |
| <i>intercalaris</i> .....                               | <b>25</b> , 46                       |
| var. <i>pulchellus</i> .....                            | 74                                   |
| <i>klipparti</i> .....                                  | <b>66</b> , 90                       |

|                                               | Page                                       |                                                | Page                                  |
|-----------------------------------------------|--------------------------------------------|------------------------------------------------|---------------------------------------|
| <i>Macrocheilus</i> <i>medialis</i> .....     | 25, 46                                     | <i>Margarita</i> <i>abyssinus</i> .....        | 48                                    |
| <i>newberryi</i> .....                        | 86                                         | <i>mudgeana</i> .....                          | 182                                   |
| <i>pallianus</i> .....                        | 51                                         | <i>nebrascensis</i> .....                      | 102, 204                              |
| <i>pulchellus</i> .....                       | 25                                         | <i>Margaritana</i> .....                       | 8                                     |
| <i>texanus</i> .....                          | 258                                        | <i>nebrascensis</i> .....                      | 2, 167                                |
| <i>Macrocyclus</i> .....                      | 107                                        | <i>Margaritella</i> .....                      | 102                                   |
| <i>spatiosa</i> .....                         | 107, 170, 221                              | <i>abotti</i> .....                            | 48                                    |
| <i>Macrodon</i> .....                         | 73, 86, 90, 117, 197                       | <i>flexistriata</i> .....                      | 122                                   |
| — ? .....                                     | 85                                         | <i>Marginella</i> <i>biplicata</i> .....       | 221                                   |
| <i>delicatus</i> .....                        | 64                                         | <i>Marsupliocrinites</i> .....                 | 3                                     |
| <i>hamiltonae</i> .....                       | 197                                        | <i>Martesia</i> .....                          | 101, 270                              |
| <i>micronema</i> .....                        | 40                                         | <i>cuneata</i> .....                           | 101                                   |
| <i>obsoletus</i> .....                        | 69, 90                                     | (Pholas) <i>cretacea</i> .....                 | 270                                   |
| <i>parvus</i> .....                           | 117                                        | ? <i>rossaleri</i> .....                       | 60                                    |
| <i>tenuistriata</i> .....                     | 51, 73                                     | <i>Martinia</i> .....                          | 30, 31, 41, 44, 63, 120, 121, 154, 18 |
| <i>tenuistriatus</i> .....                    | 41, 85                                     | <i>Matthevia</i> .....                         | 199                                   |
| <i>truncatus</i> .....                        | 197                                        | <i>variabilis</i> .....                        | 199                                   |
| <i>Macrodontina</i> .....                     | 84                                         | <i>Masonia</i> .....                           | 61                                    |
| <i>Macroscaphites</i> .....                   | 104                                        | <i>woodiana</i> .....                          | 61                                    |
| <i>Macrura</i> .....                          | 87, 46, 61, 179                            | <i>Meekella</i> .....                          | 72, 85, 120, 121, 131, 177            |
| <i>Mastra</i> .....                           | 93, 100, 111, 207, 211, 213, 215, 218, 259 | <i>striato-costata</i> .....                   | 72, 85, 121, 131, 177                 |
| — ? .....                                     | 217                                        | <i>Meekoceras</i> .....                        | 146, 162, 209                         |
| <i>alta</i> .....                             | 16                                         | <i>aplanatum</i> .....                         | 146, 162, 209                         |
| <i>arciformis</i> .....                       | 207                                        | <i>gracilitatis</i> .....                      | 146, 162, 209                         |
| ? <i>canonensis</i> .....                     | 70, 143                                    | <i>var</i> .....                               | 144, 16                               |
| ( <i>Cymbophora</i> ?) <i>formosa</i> .....   | 100                                        | <i>mushbachianus</i> .....                     | 146                                   |
| <i>gracilis</i> .....                         | 100                                        | <i>mushbachianum</i> .....                     | 162, 209                              |
| <i>nitidula</i> .....                         | 100                                        | <i>Megalaspis</i> .....                        | 124, 125                              |
| ? <i>sloukenais</i> .....                     | 100                                        | <i>belemnurus</i> .....                        | 126                                   |
| ? <i>utahensis</i> .....                      | 111                                        | <i>belemnura</i> .....                         | 125                                   |
| <i>warrenana</i> .....                        | 100                                        | <i>Megambonia</i> .....                        | 70, 194                               |
| <i>diegoana</i> .....                         | 211, 213                                   | <i>jamesi</i> .....                            | 66, 70                                |
| <i>emmonsi</i> .....                          | 111                                        | <i>occidentalis</i> .....                      | 194                                   |
| <i>formosa</i> .....                          | 16                                         | <i>Megaptera</i> .....                         | 44, 146                               |
| <i>gablotensis</i> .....                      | 217                                        | <i>casei</i> .....                             | 46                                    |
| <i>gibbosa</i> .....                          | 27, 93                                     | <i>Megistocrinus</i> .....                     | 82, 114, 128, 261                     |
| <i>gracilis</i> .....                         | 21                                         | <i>crassus</i> .....                           | 118                                   |
| ? <i>holmesi</i> .....                        | 143                                        | <i>evansi</i> .....                            | 261                                   |
| ? <i>incompta</i> .....                       | 134                                        | <i>farnsworthi</i> .....                       | 128                                   |
| <i>mala</i> .....                             | 259                                        | <i>parvirostris</i> .....                      | 82                                    |
| <i>petrosa</i> .....                          | 207                                        | <i>plenus</i> .....                            | 118                                   |
| <i>perretus</i> .....                         | 207                                        | ( <i>Saccocrinus</i> ) <i>whitei</i> .....     | 82                                    |
| <i>sloukenais</i> .....                       | 21                                         | <i>Melampus</i> .....                          | 154                                   |
| <i>syriaca</i> .....                          | 207                                        | — ? .....                                      | 150, 167                              |
| <i>texana</i> .....                           | 215, 218                                   | <i>americana</i> .....                         | 166, 169                              |
| ( <i>Trigonella</i> ) ? <i>arenaria</i> ..... | 111                                        | <i>antiquus</i> .....                          | 77, 154, 167                          |
| <i>warrenana</i> .....                        | 16                                         | ? <i>priscus</i> .....                         | 29                                    |
| <i>Mastridia</i> .....                        | 100, 111, 134, 269, 271                    | <i>Melania</i> .....                           | 28, 112, 137, 162                     |
| <i>Mazonia</i> .....                          | 225                                        | <i>anthonyi</i> .....                          | 16, 221                               |
| <i>acutula</i> .....                          | 225                                        | <i>arcta</i> .....                             | 22, 221                               |
| ? <i>castanea</i> .....                       | 225                                        | <i>clabornensis</i> .....                      | 170                                   |
| <i>elliptica</i> .....                        | 225                                        | <i>convexa</i> .....                           | 16, 17                                |
| <i>elongata</i> .....                         | 225                                        | ( <i>Goniobasis</i> ?) <i>sculptilis</i> ..... | 65                                    |
| <i>fragilis</i> .....                         | 225                                        | <i>subsculptilis</i> .....                     | 65                                    |
| <i>gigaea</i> .....                           | 225                                        | ? <i>wyomingensis</i> .....                    | 77                                    |
| <i>gracilla</i> .....                         | 225                                        | <i>humerosa</i> .....                          | 22, 221                               |
| <i>grandis</i> .....                          | 225                                        | ? <i>insculpta</i> .....                       | 162, 169                              |
| <i>myliformis</i> .....                       | 225                                        | <i>invenusta</i> .....                         | 17                                    |
| ? <i>paucis</i> .....                         | 225                                        | <i>larunda</i> .....                           | 137                                   |
| <i>valida</i> .....                           | 225                                        | <i>minutula</i> .....                          | 16, 221                               |
| <i>Mazon</i> .....                            | 100                                        | <i>multistriata</i> .....                      | 16, 221                               |
| <i>Mazon</i> .....                            | 216                                        | <i>nebrascensis</i> .....                      | 16                                    |
| <i>linguosa</i> .....                         | 216                                        | ? <i>nitidula</i> .....                        | 22                                    |
| <i>Mulinella</i> .....                        | 32                                         | <i>omita</i> .....                             | 17                                    |
| <i>Margarita</i> .....                        | 102, 264                                   | ( <i>Potodoma</i> ) <i>veterana</i> .....      | 22, 20                                |



|                                                                  | Page.                           |
|------------------------------------------------------------------|---------------------------------|
| <i>Melania</i> † <i>sculptilis</i> .....                         | 112, 166, 170                   |
| <i>simpeoni</i> .....                                            | 221, 221                        |
| <i>sublaevis</i> .....                                           | 17, 221                         |
| † <i>subsculptilis</i> .....                                     | 163, 166, 170                   |
| <i>subtortuosa</i> .....                                         | 17, 221                         |
| <i>taylori</i> .....                                             | 166, 170                        |
| <i>tenuicarinata</i> .....                                       | 17, 221                         |
| <i>warreniana</i> .....                                          | 17                              |
| <i>wyomingensis</i> .....                                        | 162, 169                        |
| <i>Melanitida</i> .....                                          | 112, 135                        |
| <i>Melanopsis</i> .....                                          | 166                             |
| <i>Melaeagrinnella</i> .....                                     | 267                             |
| <i>abrupta</i> .....                                             | 267                             |
| <i>Melina montana</i> .....                                      | 50                              |
| <i>torta</i> .....                                               | 50                              |
| <i>Melinia nitidula</i> .....                                    | 221                             |
| <i>Melininae</i> .....                                           | 29, 32                          |
| <i>Mellita texana</i> .....                                      | 215                             |
| <i>Melonites</i> .....                                           | 23                              |
| <i>dane</i> .....                                                | 23                              |
| <i>multiopora</i> .....                                          | 43, 60, 212                     |
| <i>Meneetus</i> .....                                            | 34, 106                         |
| <i>Menecephalus</i> .....                                        | 250                             |
| <i>Meretrix</i> .....                                            | 211, 212, 213, 214              |
| <i>californiana</i> .....                                        | 211, 213                        |
| <i>darlena</i> .....                                             | 212, 214                        |
| <i>decia</i> .....                                               | 50, 211, 213                    |
| <i>tularana</i> .....                                            | 211, 213                        |
| <i>uniomeria</i> .....                                           | 50, 211, 213                    |
| <i>uvana</i> .....                                               | 211, 213                        |
| <i>Merista</i> .....                                             | 57                              |
| <i>levis</i> .....                                               | 57                              |
| <i>Meristella</i> .....                                          | 56, 80, 193                     |
| <i>Meristella</i> † ( <i>Meristina</i> ) <i>cylindrica</i> ..... | 80                              |
| ( <i>Whitfieldia</i> ) <i>nasuta</i> .....                       | 193                             |
| <i>Meroerinus</i> .....                                          | 187                             |
| <i>corroboratus</i> .....                                        | 188                             |
| <i>typus</i> .....                                               | 187                             |
| <i>Merostomata</i> .....                                         | 61, 179                         |
| <i>Mesalia</i> .....                                             | 102                             |
| <i>kanasacensis</i> .....                                        | 102                             |
| <i>striata</i> .....                                             | 221                             |
| <i>Mesodesma</i> .....                                           | 137                             |
| <i>bishopi</i> .....                                             | 137                             |
| <i>Mesonacis</i> .....                                           | 199                             |
| <i>Mesorhytis</i> .....                                          | 103                             |
| <i>Metaptora</i> .....                                           | 105                             |
| <i>Metis</i> .....                                               | 100                             |
| <i>Metoptoma</i> .....                                           | 40, 60, 186, 188, 191, 195, 197 |
| † <i>analoga</i> .....                                           | 191                             |
| <i>bilingui</i> .....                                            | 188                             |
| <i>cornuta forme</i> .....                                       | 186                             |
| † <i>devonica</i> .....                                          | 195                             |
| <i>perocoidens</i> .....                                         | 197                             |
| <i>phillipsi</i> .....                                           | 191                             |
| ( <i>Platyoceras</i> ) <i>umbella</i> .....                      | 40                              |
| † <i>umbella</i> .....                                           | 60                              |
| <i>Miclinilia</i> .....                                          | 165, 177, 223, 235              |
| — †.....                                                         | 235                             |
| <i>eugenes</i> .....                                             | 177                             |
| <i>expansa</i> .....                                             | 165                             |
| <i>placenta</i> .....                                            | 165                             |
| <i>Micrabacia</i> .....                                          | 96                              |
| <i>americana</i> .....                                           | 96                              |
| <i>Microcylus</i> .....                                          | 58                              |

|                                                    | Page.                           |
|----------------------------------------------------|---------------------------------|
| <i>Microcylus discus</i> .....                     | 58                              |
| <i>Microdiscus</i> .....                           | 198                             |
| <i>dawsoni</i> .....                               | 198                             |
| <i>punctatus</i> .....                             | 198                             |
| <i>Microdome</i> .....                             | 46, 87                          |
| <i>conica</i> .....                                | 46, 87                          |
| <i>Microdon</i> .....                              | 194, 197                        |
| ( <i>Cypricardella</i> ) <i>connatus</i> .....     | 197                             |
| <i>macrostriatus</i> .....                         | 194                             |
| <i>Micromeris minutissima</i> .....                | 220                             |
| <i>perva</i> .....                                 | 220                             |
| <i>Micropurpus minutulus</i> .....                 | 221                             |
| <i>Microstizia</i> .....                           | 96                              |
| <i>millepunctata</i> .....                         | 96                              |
| <i>Micropyrgus</i> .....                           | 107, 162                        |
| <i>minutulus</i> .....                             | 107, 162, 169                   |
| <i>Milthea</i> .....                               | 99                              |
| <i>Mitra costata</i> .....                         | 221                             |
| <i>flemingii</i> .....                             | 221                             |
| <i>fussoides</i> .....                             | 221                             |
| <i>lineata</i> .....                               | 221                             |
| <i>minima</i> .....                                | 221                             |
| <i>mooreana</i> .....                              | 221                             |
| <i>Mnestia</i> .....                               | 101                             |
| <i>Modiola</i> .....                               | 23, 73, 197, 211, 213, 267, 270 |
| <i>attenuata</i> .....                             | 47                              |
| ( <i>Brachydontes</i> ) <i>multilimigera</i> ..... | 76                              |
| <i>burlingtonensis</i> .....                       | 267                             |
| <i>concentrica-costellata</i> .....                | 47                              |
| <i>contracta</i> .....                             | 50, 211, 213                    |
| <i>cretacea</i> .....                              | 47                              |
| <i>ducatelli</i> .....                             | 50                              |
| <i>granulato-cancellata</i> .....                  | 47                              |
| <i>johnsoni</i> .....                              | 270                             |
| <i>julia</i> .....                                 | 47                              |
| <i>julia</i> .....                                 | 267                             |
| ( <i>Lithodomus</i> ) † <i>inflata</i> .....       | 279                             |
| <i>meekii</i> .....                                | 47                              |
| † <i>nevadensis</i> .....                          | 197                             |
| <i>ovata</i> .....                                 | 270                             |
| <i>pedernalis</i> .....                            | 47                              |
| ( <i>Perna</i> ) <i>formosa</i> .....              | 28, 49                          |
| <i>pertenuis</i> .....                             | 49                              |
| <i>saffordi</i> .....                              | 47                              |
| <i>spiniger</i> .....                              | 50                              |
| † <i>subelliptica</i> .....                        | 73                              |
| ( <i>Volcella</i> ) <i>subimbricata</i> .....      | 80                              |
| <i>Modiolaria</i> .....                            | 98                              |
| <i>Modiolopsis</i> .....                           | 33, 54, 58, 130, 187, 190       |
| — (†).....                                         | 130                             |
| <i>acutifrons</i> .....                            | 224                             |
| <i>arcodes</i> .....                               | 224                             |
| <i>cancellata</i> .....                            | 187                             |
| <i>imbricata</i> .....                             | 224                             |
| <i>modiolaris</i> .....                            | 232                             |
| <i>modioliformis</i> .....                         | 54                              |
| <i>occidens</i> .....                              | 191                             |
| <i>orthonata</i> .....                             | 54                              |
| <i>perovata</i> .....                              | 38, 58                          |
| <i>pholadiformis</i> .....                         | 239                             |
| <i>pogonipensis</i> .....                          | 191                             |
| <i>prærupta</i> .....                              | 224                             |
| <i>siliqua</i> .....                               | 224                             |
| <i>simplex</i> .....                               | 224                             |
| <i>subnasuta</i> .....                             | 64, 91                          |

|                                      | Page.                               |                                   | Page                                                                            |
|--------------------------------------|-------------------------------------|-----------------------------------|---------------------------------------------------------------------------------|
| Leperditia (Isochilina) armata ..... | 188                                 | Limnæa (Polyrhytia) similis ..... | 92, 95, 112, 170                                                                |
| rotundata .....                      | 195                                 | tenuicosta .....                  | 16, 21                                                                          |
| Lepidesthes .....                    | 60, 144, 154, 165                   | vetusta .....                     | 92, 93, 170                                                                     |
| colletti .....                       | 144, 154, 165                       | Limnæidæ .....                    | 34, 105, 107, 112, 115                                                          |
| Lepidesthes coreyi .....             | 60                                  | Limnæinæ .....                    | 34                                                                              |
| Lepidocentrus .....                  | 63                                  | Limnophylla .....                 | 34                                                                              |
| irregularis .....                    | 63                                  | Limnophysa .....                  | 104                                                                             |
| Lepidoptera .....                    | 37, 47                              | Limopsis .....                    | 8                                                                               |
| Lepocrinites moorei .....            | 66                                  | ellipsea .....                    | 20                                                                              |
| Leptæna .....                        | 57, 78, 130, 189, 234               | nitens .....                      | 50                                                                              |
| melita .....                         | 189, 234                            | parvula .....                     | 93                                                                              |
| ? nucleata .....                     | 57                                  | pectuncularis .....               | 20                                                                              |
| sericea .....                        | 78, 130                             | striato-punctatus .....           | 255                                                                             |
| trilobata .....                      | 250                                 | Limoptera .....                   | 194                                                                             |
| Leptæsthes .....                     | 99, 105, 141, 160                   | sarmenticia .....                 | 194                                                                             |
| Leptocalia .....                     | 57                                  | Linearia .....                    | 100, 200                                                                        |
| flabellites .....                    | 57                                  | cancellata-sculpta .....          | 43                                                                              |
| Leptocardia .....                    | 99, 100, 236                        | contracta .....                   | 260                                                                             |
| carditoidea .....                    | 236                                 | ? formosa .....                   | 100                                                                             |
| typica .....                         | 236                                 | irradiata .....                   | 43                                                                              |
| Leptodosma .....                     | 194, 196                            | metastriata .....                 | 20                                                                              |
| ? .....                              | 196                                 | Lingula .....                     | 28, 33, 55, 58, 62, 72, 85, 89, 96, 119, 121, 129, 133, 177, 189, 192, 198, 202 |
| transversa .....                     | 194                                 | alba-pinensis .....               | 192                                                                             |
| Leptodomus granosus .....            | 20                                  | ampla .....                       | 250                                                                             |
| Leptolimnæa .....                    | 106, 153                            | antiqua .....                     | 231                                                                             |
| Leptopora .....                      | 147, 163                            | brevirostris .....                | 18, 33, 36                                                                      |
| winchelli .....                      | 147, 163                            | ? dawsoni .....                   | 190                                                                             |
| Leptosolen .....                     | 101, 270                            | halli .....                       | 119                                                                             |
| conradi .....                        | 70, 101                             | lowensis .....                    | 247                                                                             |
| Leucochella .....                    | 159                                 | læna .....                        | 193                                                                             |
| Lichas .....                         | 39, 55, 91                          | ligea .....                       | 192                                                                             |
| boltoni .....                        | 91                                  | var. nevadensis .....             | 193                                                                             |
| cucullus .....                       | 39, 55                              | (Lingulella) membranacea .....    | 8                                                                               |
| Lichenocrinus .....                  | 66, 69, 77                          | lonensis .....                    | 193                                                                             |
| crateriformis .....                  | 78                                  | ? mantoula .....                  | 126, 129, 189                                                                   |
| dyeri .....                          | 77                                  | melle .....                       | 8                                                                               |
| Lima .....                           | 30, 73, 86, 110, 133, 178, 218, 236 | minuta .....                      | 63                                                                              |
| acutilineata .....                   | 47                                  | mytiloides .....                  | 85                                                                              |
| ? cuneata .....                      | 30                                  | nitida .....                      | 28, 96                                                                          |
| denticulata .....                    | 47                                  | ovata .....                       | 933, 225                                                                        |
| leonensis .....                      | 218                                 | pinnaformis .....                 | 250                                                                             |
| (Limatula) erecta .....              | 110                                 | prima .....                       | 231                                                                             |
| pelagica .....                       | 47                                  | quadrata .....                    | 55                                                                              |
| (Plagiostoma) occidentalis .....     | 236                                 | scotica .....                     | 8                                                                               |
| recticostata .....                   | 30                                  | var. nobrascensis .....           | 73                                                                              |
| retifera .....                       | 52, 73, 86, 178                     | subepatulata .....                | 13, 53                                                                          |
| ? sinuata .....                      | 30                                  | umbonata .....                    | 177                                                                             |
| squamosa .....                       | 47                                  | whitei .....                      | 193                                                                             |
| wacoensis .....                      | 133, 218                            | Lingulella daviali .....          | 6                                                                               |
| Limidæ .....                         | 30, 110, 133                        | lamborni .....                    | 66                                                                              |
| Limnæa .....                         | 105, 107, 112, 153, 161             | Lingulepis .....                  | 31, 189, 233, 234, 261                                                          |
| (Acella) haldemani .....             | 168                                 | cuneolus .....                    | 900, 261                                                                        |
| ? compactilis .....                  | 169                                 | dakotensis .....                  | 261                                                                             |
| (Leptolimnæa) minuscula .....        | 153                                 | ella .....                        | 934                                                                             |
| (Limnophysa ?) compactilis .....     | 77                                  | mæra .....                        | 189, 933                                                                        |
| nitidula .....                       | 112, 168                            | ? minuta .....                    | 189, 974                                                                        |
| vetusta .....                        | 112                                 | peratennatus .....                | 900, 261                                                                        |
| meekiana .....                       | 107                                 | pinnaformis .....                 | 261                                                                             |
| meekii .....                         | 170                                 | pinnaformis .....                 | 31, 68                                                                          |
| minuscula .....                      | 170                                 | prima .....                       | 31                                                                              |
| nitidula .....                       | 95, 161, 221                        | primæformis .....                 | 259                                                                             |
| (Plourolimnæa) tenuicostata .....    | 106, 161, 169, 221                  | Lingulidæ .....                   | 31, 33, 62, 96, 123, 261, 263                                                   |
| (Polyrhytia) kingii .....            | 112, 170                            | Linnaresonia .....                | 190                                                                             |
| shumardi .....                       | 107, 170                            | sagittatis .....                  | 190                                                                             |

|                                                | Page                            |
|------------------------------------------------|---------------------------------|
| <i>Linnarssonia transversa</i> .....           | 199                             |
| <i>Liopistha</i> .....                         | 47, 101, 261                    |
| ( <i>Cymella</i> ) <i>meeki</i> .....          | <b>261</b>                      |
| <i>protecta</i> .....                          | 101                             |
| <i>Lioplacea</i> .....                         | 35, 49                          |
| <i>veterna</i> .....                           | 49                              |
| <i>veterius</i> .....                          | 35, 107                         |
| <i>Liopodesthes</i> .....                      | <b>134</b> , 158                |
| <i>lingulifera</i> .....                       | <b>134</b>                      |
| <i>nuptialis</i> .....                         | 134                             |
| <i>obscurata</i> .....                         | <b>158</b>                      |
| <i>Lithasia antiqua</i> .....                  | 166, 170                        |
| <i>Lithodendron lineata</i> .....              | 49                              |
| <i>Lithodomus</i> .....                        | 38, 208, 210, 267               |
| <i>affinis</i> .....                           | 267                             |
| <i>cretaceus</i> .....                         | <b>208</b>                      |
| <i>ripleyana</i> .....                         | 267                             |
| <i>stamineus</i> .....                         | <b>210</b>                      |
| <i>Lithodontium furcatum</i> .....             | 229                             |
| <i>naeutum</i> .....                           | 229                             |
| <i>scorpius</i> .....                          | 229                             |
| <i>Lithophaga</i> .....                        | 38, 61                          |
| <i>lingualis</i> .....                         | 38, 61                          |
| <i>pertenus</i> .....                          | <b>38</b> , 84                  |
| <i>Lithostrotion</i> .....                     | 30, 109, 131, 149, 156, 165     |
| — ? .....                                      | 30, 232                         |
| <i>californiense</i> .....                     | <b>30</b>                       |
| <i>canadense</i> .....                         | 149                             |
| <i>mamillare</i> .....                         | 30, 149, 156, 165               |
| <i>microstylum</i> .....                       | <b>165</b>                      |
| <i>whitneyi</i> .....                          | 109, 131                        |
| <i>Lithostyliidum</i> .....                    | 229                             |
| <i>amphiodon</i> .....                         | 229                             |
| <i>crenulatatum</i> .....                      | 229                             |
| <i>laeve</i> .....                             | 229                             |
| <i>quadratum</i> .....                         | 229                             |
| <i>rude</i> .....                              | 229                             |
| <i>trabecula</i> .....                         | 229                             |
| <i>Littorina</i> .....                         | 212, 214                        |
| <i>pedroana</i> .....                          | <b>212</b> , 214                |
| <i>Littorinidae</i> .....                      | 103                             |
| <i>Lituites</i> .....                          | 80, 91                          |
| <i>griftonensis</i> .....                      | <b>65</b> , 91                  |
| <i>fortoni</i> .....                           | 80                              |
| <i>Loganellus</i> .....                        | 234, 260, 261                   |
| <i>Lonchocephalus</i> .....                    | <b>250</b>                      |
| <i>chippewikensis</i> .....                    | <b>250</b>                      |
| <i>hamulus</i> .....                           | <b>250</b>                      |
| <i>Lophophyllum</i> .....                      | 72, 85, 117, 131, 138, 165, 177 |
| <i>calocola</i> .....                          | <b>117</b>                      |
| <i>expansum</i> .....                          | <b>138</b> , 165                |
| <i>proliferum</i> .....                        | 72, 85, 131, 177                |
| <i>Loxonema</i> .....                          | 25, 27, 46, 86, 152, 195, 197   |
| — ? .....                                      | 195                             |
| <i>approximatum</i> .....                      | <b>195</b>                      |
| <i>attenuata</i> var. <i>semicostata</i> ..... | 67                              |
| <i>bella</i> .....                             | <b>197</b>                      |
| <i>cerithiformis</i> .....                     | <b>25</b> , 46                  |
| <i>eurekaensis</i> .....                       | <b>195</b>                      |
| <i>inornata</i> .....                          | <b>25</b>                       |
| <i>kanei</i> .....                             | <b>36</b>                       |
| <i>multicostata</i> .....                      | <b>27</b> , 46                  |
| <i>nitidula</i> .....                          | <b>25</b>                       |
| <i>nobile</i> .....                            | <b>195</b>                      |
| <i>rugosa</i> .....                            | <b>25</b> , 46, 152             |

|                                                         | Page                                 |
|---------------------------------------------------------|--------------------------------------|
| <i>Loxonema scitula</i> .....                           | <b>25</b> , 46                       |
| <i>semicostata</i> .....                                | 86                                   |
| ? <i>subattenuatum</i> .....                            | 195                                  |
| <i>Lucina</i> .....                                     | 80, 99, 134, 153, 207, 208, 263, 268 |
| <i>acutilineata</i> .....                               | <b>206</b>                           |
| <i>cleburni</i> .....                                   | <b>157</b>                           |
| <i>cretacea</i> .....                                   | 268                                  |
| ( <i>Diplodonta</i> ?) <i>subundata</i> .....           | 263                                  |
| <i>fibrosa</i> .....                                    | <b>256</b>                           |
| <i>gyrata</i> .....                                     | 220                                  |
| <i>lirata</i> .....                                     | 80                                   |
| <i>occidentalis</i> .....                               | <b>16</b> , 50, 99, 263              |
| var. <i>ventricosa</i> .....                            | 99                                   |
| ( <i>Paracyclas</i> ) <i>ohioensis</i> .....            | <b>66</b> , 80                       |
| <i>permacra</i> .....                                   | 50                                   |
| <i>profunda</i> .....                                   | <b>153</b> , 157                     |
| <i>safedensis</i> .....                                 | <b>209</b>                           |
| <i>smockana</i> .....                                   | <b>266</b>                           |
| <i>subtruncata</i> .....                                | <b>207</b>                           |
| <i>subundata</i> .....                                  | <b>13</b> , 99, 134                  |
| <i>syriaca</i> .....                                    | <b>207</b>                           |
| <i>ventricosa</i> .....                                 | 263                                  |
| <i>Lucinidae</i> .....                                  | 30, 99, 110, 134, 263, 268           |
| <i>Lunatia</i> .....                                    | 102, 137, 264                        |
| <i>acutispira</i> .....                                 | 48                                   |
| <i>concinna</i> .....                                   | 102, <b>264</b>                      |
| <i>minima</i> .....                                     | 221                                  |
| <i>occidentalis</i> .....                               | 102                                  |
| <i>subcrassa</i> .....                                  | 162                                  |
| <i>utahensis</i> .....                                  | <b>137</b>                           |
| <i>Lunulicardium</i> .....                              | 235                                  |
| <i>fragosum</i> .....                                   | 235                                  |
| <i>Lunulites</i> .....                                  | 220                                  |
| <i>bonel</i> .....                                      | 220                                  |
| <i>daetolioides</i> .....                               | <b>247</b>                           |
| <i>duocosi</i> .....                                    | 220                                  |
| <i>interstitia</i> .....                                | 220                                  |
| <i>Lutraria</i> ? .....                                 | 211, 213, 215, 217                   |
| <i>transmontana</i> .....                               | <b>215</b>                           |
| <i>traskel</i> .....                                    | 213                                  |
| <i>Lyellia</i> .....                                    | 155                                  |
| <i>americana</i> .....                                  | 155                                  |
| <i>Lyonsia</i> ( <i>Panopaea</i> ) <i>concava</i> ..... | <b>19</b>                            |
| <i>Lyopomata</i> .....                                  | 96, 133                              |
| <i>Lyosoma</i> .....                                    | <b>164</b>                           |
| <i>powelli</i> .....                                    | 164, 179                             |
| <i>Lyropora</i> .....                                   | 60                                   |
| <b>M.</b>                                               |                                      |
| <i>Maclurea</i> .....                                   | 130, 191, 234                        |
| — (?) .....                                             | 130, 191                             |
| <i>annulata</i> .....                                   | <b>191</b>                           |
| <i>carinata</i> .....                                   | <b>191</b>                           |
| <i>minima</i> .....                                     | <b>234</b>                           |
| <i>subannulata</i> .....                                | <b>191</b>                           |
| <i>Macrocallista</i> .....                              | 100                                  |
| <i>Macrocheilidae</i> .....                             | 132                                  |
| <i>Macrocheilus</i> .....                               | 25, 46, 74, 86, 90, 127, 132, 197    |
| — ? .....                                               | <b>46</b> , 197                      |
| <i>altonensis</i> .....                                 | 86                                   |
| <i>angulifera</i> .....                                 | <b>197</b> , 132                     |
| <i>intercalaris</i> .....                               | <b>25</b> , 46                       |
| var. <i>pulchellus</i> .....                            | 74                                   |
| <i>kipparti</i> .....                                   | 1                                    |

|                                              | Page                                       |                                                | Page                                   |
|----------------------------------------------|--------------------------------------------|------------------------------------------------|----------------------------------------|
| <i>Macrocheilus medialis</i> .....           | 25, 46                                     | <i>Margarita abyssinus</i> .....               | 6                                      |
| <i>newberryi</i> .....                       | 86                                         | <i>mudgeana</i> .....                          | 162                                    |
| <i>pallianus</i> .....                       | 51                                         | <i>nebrascensis</i> .....                      | 162, 261                               |
| <i>pulchellus</i> .....                      | 25                                         | <i>Margaritana</i> .....                       | 6                                      |
| <i>texanus</i> .....                         | 258                                        | <i>nebrascensis</i> .....                      | 2, 167                                 |
| <i>Macrocyella</i> .....                     | 107                                        | <i>Margaritella</i> .....                      | 162                                    |
| <i>spatiosa</i> .....                        | 107, 170, 221                              | <i>abotti</i> .....                            | 48                                     |
| <i>Macrodon</i> .....                        | 73, 86, 90, 117, 197                       | <i>flexistriata</i> .....                      | 162                                    |
| — ? .....                                    | 85                                         | <i>Marginella biplicata</i> .....              | 211                                    |
| <i>delicatus</i> .....                       | 64                                         | <i>Marsupiocrinites</i> .....                  | 3                                      |
| <i>hamiltonae</i> .....                      | 197                                        | <i>Martesia</i> .....                          | 161, 276                               |
| <i>miconema</i> .....                        | 40                                         | <i>cuneata</i> .....                           | 161                                    |
| <i>obsoletus</i> .....                       | 69, 90                                     | (Pholas) <i>cretacea</i> .....                 | 276                                    |
| <i>parvus</i> .....                          | 117                                        | ? <i>rossleri</i> .....                        | 63                                     |
| <i>tenuistriata</i> .....                    | 51, 73                                     | <i>Martinia</i> .....                          | 30, 31, 41, 44, 63, 126, 131, 155, 158 |
| <i>tenuistriatus</i> .....                   | 41, 85                                     | <i>Matthevia</i> .....                         | 199                                    |
| <i>truncatus</i> .....                       | 197                                        | <i>variabilis</i> .....                        | 199                                    |
| <i>Macrodonotina</i> .....                   | 34                                         | <i>Masonia</i> .....                           | 61                                     |
| <i>Macroscaphites</i> .....                  | 104                                        | <i>woodiana</i> .....                          | 6                                      |
| <i>Macrura</i> .....                         | 37, 46, 61, 179                            | <i>Meekella</i> .....                          | 72, 85, 126, 121, 131, 177             |
| <i>Mactra</i> .....                          | 93, 100, 111, 207, 211, 213, 215, 218, 259 | <i>striato-costata</i> .....                   | 72, 85, 121, 131, 177                  |
| — ? .....                                    | 217                                        | <i>Meekoceras</i> .....                        | 146, 162, 239                          |
| <i>alta</i> .....                            | 16                                         | <i>aplanatum</i> .....                         | 146, 162, 239                          |
| <i>arciformis</i> .....                      | 207                                        | <i>gracilitatis</i> .....                      | 146, 162, 239                          |
| ? <i>canonensis</i> .....                    | 70, 143                                    | <i>var</i> .....                               | 146, 162                               |
| ( <i>Cymbophora</i> ?) <i>formosa</i> .....  | 100                                        | <i>mushbachianus</i> .....                     | 146                                    |
| <i>gracilis</i> .....                        | 100                                        | <i>mushbachianum</i> .....                     | 162, 239                               |
| <i>nitidula</i> .....                        | 100                                        | <i>Megalaspis</i> .....                        | 126, 129                               |
| ? <i>siouxensis</i> .....                    | 100                                        | <i>belemnurus</i> .....                        | 126                                    |
| ? <i>utahensis</i> .....                     | 111                                        | <i>belemnura</i> .....                         | 129                                    |
| <i>warrenana</i> .....                       | 100                                        | <i>Megambonia</i> .....                        | 71, 124                                |
| <i>diegoana</i> .....                        | 211, 213                                   | <i>jamesi</i> .....                            | 66, 79                                 |
| <i>emmonsi</i> .....                         | 111                                        | <i>occidentalis</i> .....                      | 194                                    |
| <i>formosa</i> .....                         | 16                                         | <i>Megaptera</i> .....                         | 24, 126                                |
| <i>gablotensis</i> .....                     | 217                                        | <i>casei</i> .....                             | 26                                     |
| <i>gibbosa</i> .....                         | 27, 93                                     | <i>Megistocrinus</i> .....                     | 82, 118, 126, 251                      |
| <i>gracilis</i> .....                        | 21                                         | <i>crassus</i> .....                           | 118                                    |
| ? <i>holmesi</i> .....                       | 143                                        | <i>evansi</i> .....                            | 251                                    |
| ? <i>incompta</i> .....                      | 134                                        | <i>farnsworthi</i> .....                       | 126                                    |
| <i>maia</i> .....                            | 259                                        | <i>parvirostris</i> .....                      | 82                                     |
| <i>petrosa</i> .....                         | 207                                        | <i>plenus</i> .....                            | 118                                    |
| <i>pervetus</i> .....                        | 207                                        | ( <i>Saccocrinus</i> ) <i>whitai</i> .....     | 82                                     |
| <i>siouxensis</i> .....                      | 21                                         | <i>Melampus</i> .....                          | 158                                    |
| <i>syriaca</i> .....                         | 207                                        | — ? .....                                      | 158, 167                               |
| <i>texana</i> .....                          | 215, 218                                   | <i>americana</i> .....                         | 166, 169                               |
| ( <i>Trigonella</i> ?) <i>arenaria</i> ..... | 111                                        | <i>antiquus</i> .....                          | 77, 158, 167                           |
| <i>warrenana</i> .....                       | 16                                         | ? <i>priscus</i> .....                         | 99                                     |
| <i>Mactridae</i> .....                       | 100, 111, 134, 269, 271                    | <i>Melania</i> .....                           | 28, 112, 137, 161                      |
| <i>Mæonia</i> .....                          | 225                                        | <i>anthonyi</i> .....                          | 16, 221                                |
| <i>axinia</i> .....                          | 225                                        | <i>arcta</i> .....                             | 22, 221                                |
| ? <i>carinata</i> .....                      | 225                                        | <i>claibornensis</i> .....                     | 170                                    |
| <i>elliptica</i> .....                       | 225                                        | <i>convexa</i> .....                           | 16, 17                                 |
| <i>elongata</i> .....                        | 225                                        | ( <i>Goniobasis</i> ?) <i>sculptilis</i> ..... | 65                                     |
| <i>fragilis</i> .....                        | 225                                        | <i>subsculptilis</i> .....                     | 65                                     |
| <i>gigas</i> .....                           | 225                                        | ? <i>wyomingensis</i> .....                    | 77                                     |
| <i>gracilis</i> .....                        | 225                                        | <i>humerosa</i> .....                          | 22, 221                                |
| <i>grandis</i> .....                         | 225                                        | ? <i>inaculpta</i> .....                       | 162, 169                               |
| <i>myiformis</i> .....                       | 225                                        | <i>invenusta</i> .....                         | 17                                     |
| ? <i>recta</i> .....                         | 225                                        | <i>larunda</i> .....                           | 137                                    |
| <i>valida</i> .....                          | 225                                        | <i>minutula</i> .....                          | 16, 221                                |
| <i>Mæra</i> .....                            | 100                                        | <i>multistriata</i> .....                      | 16, 221                                |
| <i>Malæa</i> .....                           | 216                                        | <i>nebrascensis</i> .....                      | 16                                     |
| <i>ringens</i> .....                         | 216                                        | ? <i>nitidula</i> .....                        | 22                                     |
| <i>Malletina</i> .....                       | 32                                         | <i>omitta</i> .....                            | 17                                     |
| <i>Margarita</i> .....                       | 102, 264                                   | ( <i>Potodoma</i> ) <i>veterna</i> .....       | 25, 26                                 |



|                                                                  | Page.                           |                                                    | Page.                           |
|------------------------------------------------------------------|---------------------------------|----------------------------------------------------|---------------------------------|
| <i>Melania</i> † <i>sculptilis</i> .....                         | 112, 186, 170                   | <i>Microcylus</i> † <i>disens</i> .....            | <b>58</b>                       |
| <i>simpsoni</i> .....                                            | <b>22</b> , 221                 | <i>Microdiscus</i> .....                           | 198                             |
| <i>sublaevis</i> .....                                           | <b>17</b> , 221                 | <i>dawsoni</i> .....                               | 198                             |
| † <i>subsculptilis</i> .....                                     | 163, 166, 170                   | <i>punctatus</i> .....                             | 198                             |
| <i>subtortuosa</i> .....                                         | <b>17</b> , 221                 | <i>Microdoma</i> .....                             | <b>40</b> , 87                  |
| <i>taylori</i> .....                                             | 166, 170                        | <i>conica</i> .....                                | <b>40</b> , 87                  |
| <i>tenuicarinata</i> .....                                       | <b>17</b> , 221                 | <i>Microdon</i> .....                              | 194, 197                        |
| <i>warrenana</i> .....                                           | <b>17</b>                       | ( <i>Cypriocardella</i> ) <i>connatus</i> .....    | <b>197</b>                      |
| <i>wyomingensis</i> .....                                        | 162, 169                        | <i>macrostriatus</i> .....                         | <b>194</b>                      |
| <i>Melanidae</i> .....                                           | 112, 135                        | <i>Micromeris</i> <i>minutissima</i> .....         | 220                             |
| <i>Melanopsis</i> .....                                          | 166                             | <i>parva</i> .....                                 | 220                             |
| <i>Meleagrinella</i> .....                                       | <b>267</b>                      | <i>Micropurpus</i> <i>minutulus</i> .....          | 221                             |
| <i>abrupta</i> .....                                             | 267                             | <i>Microstizia</i> .....                           | <b>96</b>                       |
| <i>Melina</i> <i>montana</i> .....                               | 50                              | <i>millepunctata</i> .....                         | <b>96</b>                       |
| <i>torta</i> .....                                               | 50                              | <i>Micropyrgus</i> .....                           | 107, 162                        |
| <i>Melinia</i> <i>nitidula</i> .....                             | 221                             | <i>minutulus</i> .....                             | 107, 162, 169                   |
| <i>Melinae</i> .....                                             | 29, 32                          | <i>Milthea</i> .....                               | 99                              |
| <i>Mellita</i> <i>texana</i> .....                               | <b>215</b>                      | <i>Mitra</i> <i>costata</i> .....                  | 221                             |
| <i>Melonites</i> .....                                           | 23                              | <i>flemingii</i> .....                             | 221                             |
| <i>danae</i> .....                                               | <b>23</b>                       | <i>fussoides</i> .....                             | 221                             |
| <i>multiopora</i> .....                                          | 43, 60, 212                     | <i>lineata</i> .....                               | 221                             |
| <i>Menetus</i> .....                                             | 34, 106                         | <i>minima</i> .....                                | 221                             |
| <i>Menocephalus</i> .....                                        | <b>250</b>                      | <i>mooreana</i> .....                              | 221                             |
| <i>Meretrix</i> .....                                            | 211, 212, 213, 214              | <i>Mnestia</i> .....                               | 101                             |
| <i>californiana</i> .....                                        | <b>211</b> , 213                | <i>Modiola</i> .....                               | 28, 73, 197, 211, 213, 267, 270 |
| <i>dariena</i> .....                                             | <b>212</b> , 214                | <i>attenuata</i> .....                             | 47                              |
| <i>decisa</i> .....                                              | 50, <b>211</b> , 213            | ( <i>Brachydontes</i> ) <i>multifinigera</i> ..... | <b>76</b>                       |
| <i>tularana</i> .....                                            | <b>211</b> , 213                | <i>burlingtonensis</i> .....                       | <b>267</b>                      |
| <i>uniemeris</i> .....                                           | 50, 211, 213                    | <i>concentrica-costellata</i> .....                | 47                              |
| <i>uvasana</i> .....                                             | <b>211</b> , 213                | <i>contracta</i> .....                             | 50, <b>211</b> , 213            |
| <i>Merista</i> .....                                             | 57                              | <i>cretacea</i> .....                              | 47                              |
| <i>lavis</i> .....                                               | 57                              | <i>ducatelli</i> .....                             | 50                              |
| <i>Meristella</i> .....                                          | 56, 80, 193                     | <i>granulato-cancellata</i> .....                  | 47                              |
| <i>Meristella</i> † ( <i>Meristina</i> ) <i>cylindrica</i> ..... | 80                              | <i>johnsoni</i> .....                              | <b>270</b>                      |
| ( <i>Whitfieldia</i> ) <i>nasuta</i> .....                       | 193                             | <i>julia</i> .....                                 | 47                              |
| <i>Merocrinus</i> .....                                          | 187                             | <i>julia</i> .....                                 | 267                             |
| <i>corroboratus</i> .....                                        | <b>188</b>                      | ( <i>Lithodomus</i> ?) <i>inflata</i> .....        | <b>270</b>                      |
| <i>typus</i> .....                                               | <b>187</b>                      | <i>meekii</i> .....                                | 47                              |
| <i>Merostomata</i> .....                                         | 61, 179                         | † <i>nevadensis</i> .....                          | <b>197</b>                      |
| <i>Mesalia</i> .....                                             | 102                             | <i>ovata</i> .....                                 | 270                             |
| <i>kansasensis</i> .....                                         | 102                             | <i>pedernalis</i> .....                            | 47                              |
| <i>striata</i> .....                                             | 221                             | ( <i>Perna</i> ) <i>formosa</i> .....              | <b>28</b> , 49                  |
| <i>Mesodesma</i> .....                                           | 137                             | <i>portensis</i> .....                             | 49                              |
| <i>bishopi</i> .....                                             | <b>137</b>                      | <i>saffordi</i> .....                              | 47                              |
| <i>Mesonacis</i> .....                                           | <b>199</b>                      | <i>spiniger</i> .....                              | 50                              |
| <i>Mesorhytis</i> .....                                          | 103                             | † <i>subelliptica</i> .....                        | 73                              |
| <i>Metaptera</i> .....                                           | 105                             | ( <i>Volsella</i> ) <i>subimbricata</i> .....      | 80                              |
| <i>Metis</i> .....                                               | 100                             | <i>Modiolaria</i> .....                            | 98                              |
| <i>Metoptoma</i> .....                                           | 40, 60, 186, 188, 191, 195, 197 | <i>Modiolopsis</i> .....                           | 38, 54, 58, 130, 187, 190       |
| † <i>analoga</i> .....                                           | <b>191</b>                      | — (†).....                                         | 130                             |
| <i>billingsi</i> .....                                           | <b>188</b>                      | <i>acutifrons</i> .....                            | <b>224</b>                      |
| <i>cornuta forme</i> .....                                       | <b>186</b>                      | <i>arcodes</i> .....                               | <b>224</b>                      |
| † <i>devonica</i> .....                                          | <b>195</b>                      | <i>cancellata</i> .....                            | 187                             |
| <i>peroccidens</i> .....                                         | <b>197</b>                      | <i>imbricata</i> .....                             | <b>224</b>                      |
| <i>phillipsi</i> .....                                           | <b>191</b>                      | <i>modiolaris</i> .....                            | 232                             |
| ( <i>Platyceas</i> ) <i>umbella</i> .....                        | <b>40</b>                       | <i>modioliformis</i> .....                         | <b>54</b>                       |
| † <i>umbella</i> .....                                           | 60                              | <i>occidens</i> .....                              | <b>191</b>                      |
| <i>Mithilina</i> .....                                           | 165, 177, 223, 235              | <i>orthonata</i> .....                             | <b>54</b>                       |
| — ?.....                                                         | 235                             | <i>perovata</i> .....                              | <b>38</b> , 58                  |
| <i>eugenes</i> .....                                             | <b>177</b>                      | <i>pholadiformis</i> .....                         | <b>232</b>                      |
| <i>expansa</i> .....                                             | <b>165</b>                      | <i>pogonipensis</i> .....                          | <b>191</b>                      |
| <i>placenta</i> .....                                            | <b>165</b>                      | <i>prerupta</i> .....                              | <b>224</b>                      |
| <i>Micrabacia</i> .....                                          | 96                              | <i>siliqua</i> .....                               | <b>224</b>                      |
| <i>americana</i> .....                                           | 96                              | <i>simplex</i> .....                               | <b>224</b>                      |
| <i>Microcylus</i> .....                                          | <b>58</b>                       | <i>subnasuta</i> .....                             | <b>64</b> , 91                  |

|                                                                                                                                                                                                                                                                                 | Page.                           |                                              | Page.                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|----------------------------------------------|------------------------------------------------------------------|
| <b>Modiomorpha</b> .....                                                                                                                                                                                                                                                        | 110, 194, 197                   | <b>Myacites (Pleuromya) weberensis</b> ..... | 111                                                              |
| <i>altiforme</i> .....                                                                                                                                                                                                                                                          | 194                             | <i>subcompressus</i> .....                   | 104                                                              |
| <i>ambigua</i> .....                                                                                                                                                                                                                                                            | 197                             | <i>subellipticus</i> .....                   | 24                                                               |
| <i>† desiderata</i> .....                                                                                                                                                                                                                                                       | 197                             | <b>Myacites unionoides</b> .....             | 49                                                               |
| <i>† lata</i> .....                                                                                                                                                                                                                                                             | 110                             | <b>Myalina</b> .....                         | 24, 32, 44, 45, 73, 82, 83, 132, 151, 173,<br>193, 226, 237, 239 |
| <i>oblonga</i> .....                                                                                                                                                                                                                                                            | 194                             | <i>— f. —</i> .....                          | 132                                                              |
| <i>obtusa</i> .....                                                                                                                                                                                                                                                             | 194                             | <i>angulata</i> .....                        | 24, 244                                                          |
| <i>† ovata</i> .....                                                                                                                                                                                                                                                            | 110                             | <i>apachei</i> .....                         | 243                                                              |
| <i>† pintoensis</i> .....                                                                                                                                                                                                                                                       | 197                             | <i>aviculoides</i> .....                     | 21, 32, 226                                                      |
| <b>Mollusca</b> 24, 31, 32, 33, 38, 40, 41, 43, 44, 45, 54, 55, 56,<br>57, 58, 59, 60, 61, 68, 72, 78, 80, 84, 85, 88, 90,<br>91, 94, 95, 96, 105, 107, 108, 109, 110, 111, 112,<br>118, 120, 133, 135, 136, 137, 138, 142, 144, 148,<br>151, 153, 154, 155, 176, 225, 255, 260 |                                 | <i>concentrica</i> .....                     | 24, 44                                                           |
| <i>vora</i> .....                                                                                                                                                                                                                                                               | 132, 133, 164                   | <i>congeneris</i> .....                      | 196                                                              |
| <b>Molluscoides</b> .....                                                                                                                                                                                                                                                       | 133, 165, 260                   | <i>† (Gervillia) perplana</i> .....          | 239                                                              |
| <b>Monoceras sulcatum</b> .....                                                                                                                                                                                                                                                 | 222                             | <i>meliniformis</i> .....                    | 41, 45                                                           |
| <b>Monomyaria</b> .....                                                                                                                                                                                                                                                         | 97, 105, 132, 133, 263, 266     | <i>(Mytelus) perattenuata</i> .....          | 19, 39                                                           |
| <b>Monopleura</b> .....                                                                                                                                                                                                                                                         | 176                             | <i>nemesis</i> .....                         | 196                                                              |
| <i>maroida</i> .....                                                                                                                                                                                                                                                            | 176                             | <i>neanus</i> .....                          | 196                                                              |
| <i>pinguiscula</i> .....                                                                                                                                                                                                                                                        | 176                             | <i>perattenuata</i> .....                    | 33, 51, 86                                                       |
| <b>Monopteria</b> .....                                                                                                                                                                                                                                                         | 41, 45, 127, 132, 178           | <i>permiana</i> .....                        | 33, 151, 236                                                     |
| <i>gibbosa</i> .....                                                                                                                                                                                                                                                            | 178                             | <i>recta</i> .....                           | 26                                                               |
| <i>marian</i> .....                                                                                                                                                                                                                                                             | 127, 132                        | <i>recurvirostra</i> .....                   | 24, 45                                                           |
| <b>Monotia</b> .....                                                                                                                                                                                                                                                            | 86, 258                         | <i>recurvirostris</i> .....                  | 178                                                              |
| <i>— f. —</i> .....                                                                                                                                                                                                                                                             | 258                             | <i>squamosa</i> .....                        | 20, 238                                                          |
| <i>† gregaria</i> .....                                                                                                                                                                                                                                                         | 64, 86                          | <i>st. ludovica</i> .....                    | 84                                                               |
| <i>hawui</i> .....                                                                                                                                                                                                                                                              | 19, 20, 51                      | <i>subquadrata</i> .....                     | 20, 32, 51, 73, 173, 274                                         |
| <i>speluncaria</i> .....                                                                                                                                                                                                                                                        | 258                             | <i>swallowi</i> .....                        | 45, 51, 73, 132, 178                                             |
| <b>Monticulipora</b> .....                                                                                                                                                                                                                                                      | 129, 135, 155                   | <b>Myrophoria</b> .....                      | 111, 123                                                         |
| <i>dalli</i> .....                                                                                                                                                                                                                                                              | 129                             | <i>ambilineata</i> .....                     | 133                                                              |
| <i>frondosa</i> .....                                                                                                                                                                                                                                                           | 155                             | <i>lineata</i> .....                         | 111                                                              |
| <i>monticula</i> .....                                                                                                                                                                                                                                                          | 138                             | <b>Myomia</b> .....                          | 234                                                              |
| <b>Montinia (Pariarchus) crustuloides</b> .....                                                                                                                                                                                                                                 | 222                             | <i>elongata</i> .....                        | 234                                                              |
| <i>lyelli</i> .....                                                                                                                                                                                                                                                             | 220                             | <i>valida</i> .....                          | 234                                                              |
| <i>pileus-sinensis</i> .....                                                                                                                                                                                                                                                    | 222                             | <b>Myriapoda</b> .....                       | 37, 44, 61                                                       |
| <i>tumida</i> .....                                                                                                                                                                                                                                                             | 222                             | <b>Myrtea</b> .....                          | 39                                                               |
| <b>Montulinorina</b> .....                                                                                                                                                                                                                                                      | 104                             | <b>Mytelus subarcuatus</b> .....             | 16                                                               |
| <i>shoshonense</i> .....                                                                                                                                                                                                                                                        | 104                             | <b>Mytilarca</b> .....                       | 194                                                              |
| <i>† vermillionense</i> .....                                                                                                                                                                                                                                                   | 104                             | <i>chemungensis</i> .....                    | 194                                                              |
| <b>Mullus</b> .....                                                                                                                                                                                                                                                             | 215, 216                        | <i>dubia</i> .....                           | 194                                                              |
| <i>denudata</i> .....                                                                                                                                                                                                                                                           | 215, 216                        | <i>(Plethomytilus) oviformis</i> .....       | 194                                                              |
| <b>Mullusculula</b> .....                                                                                                                                                                                                                                                       | 34                              | <b>Mytilidae</b> .....                       | 30, 38, 98, 110, 111, 200, 262, 267, 279                         |
| <b>Murchisonia</b> .....                                                                                                                                                                                                                                                        | 55, 74, 117, 147, 151, 164, 191 | <b>Mytiloides</b> .....                      | 97                                                               |
| <i>helicina</i> .....                                                                                                                                                                                                                                                           | 55                              | <b>Mytilus</b> .....                         | 30, 98, 116, 164, 211, 213, 217, 260, 262, 267                   |
| <i>copi</i> .....                                                                                                                                                                                                                                                               | 151                             | <i>attenuatus</i> .....                      | 15                                                               |
| <i>inornata</i> .....                                                                                                                                                                                                                                                           | 40, 87                          | <i>concavus f.</i> .....                     | 51                                                               |
| <i>major</i> .....                                                                                                                                                                                                                                                              | 232                             | <i>engelmanni</i> .....                      | 274                                                              |
| <i>milleri</i> .....                                                                                                                                                                                                                                                            | 191                             | <i>febristriatus</i> .....                   | 116                                                              |
| <i>nebrascensis</i> .....                                                                                                                                                                                                                                                       | 74                              | <i>humerus</i> .....                         | 211, 213                                                         |
| <i>oleolata</i> .....                                                                                                                                                                                                                                                           | 67                              | <i>inezensis</i> .....                       | 217                                                              |
| <i>† prolixa</i> .....                                                                                                                                                                                                                                                          | 117                             | <i>inflatus</i> .....                        | 59                                                               |
| <i>sublineolata</i> .....                                                                                                                                                                                                                                                       | 51                              | <i>meekii</i> .....                          | 256                                                              |
| <i>terrestris</i> .....                                                                                                                                                                                                                                                         | 147, 164                        | <i>multistriatus</i> .....                   | 39                                                               |
| <b>Murchisonella</b> .....                                                                                                                                                                                                                                                      | 103                             | <i>occidentalis</i> .....                    | 116                                                              |
| <i>—</i> .....                                                                                                                                                                                                                                                                  | 215, 216                        | <i>oblivius</i> .....                        | 267                                                              |
| <i>—</i> .....                                                                                                                                                                                                                                                                  | 205                             | <i>(Orthonota) ventricosa</i> .....          | 116                                                              |
| <i>—</i> .....                                                                                                                                                                                                                                                                  | 215, 216                        | <i>pedroanus</i> .....                       | 211, 213                                                         |
| <i>—</i> .....                                                                                                                                                                                                                                                                  | 216                             | <i>pertenuis</i> .....                       | 18                                                               |
| <i>—</i> .....                                                                                                                                                                                                                                                                  | 231                             | <i>subarcuatus</i> .....                     | 88                                                               |
| <b>Murchisonella</b> .....                                                                                                                                                                                                                                                      | 31, 34, 111, 164                | <i>whitei</i> .....                          | 164, 260, 262                                                    |
| <i>—</i> .....                                                                                                                                                                                                                                                                  | 31                              |                                              |                                                                  |
| <i>—</i> .....                                                                                                                                                                                                                                                                  | 111                             |                                              |                                                                  |
| <i>—</i> .....                                                                                                                                                                                                                                                                  | 21, 34                          |                                              |                                                                  |
| <i>(Murchisonella) subcompressa</i> .....                                                                                                                                                                                                                                       | 111, 179                        |                                              |                                                                  |

N.

|                                   |     |
|-----------------------------------|-----|
| <b>Naila</b> .....                | 165 |
| <b>Naladites carbonaria</b> ..... | 167 |
| <i>elongata</i> .....             | 167 |
| <i>lævis</i> .....                | 167 |
| <b>Nalides</b> .....              | 165 |

|                                     | Page.                                                                                      |                                    | Page.                   |
|-------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------|-------------------------|
| Narica .....                        | 212, 214                                                                                   | Nautilus (Cryptoceras) capax ..... | 39, 92                  |
| diegoana .....                      | 50, 212, 214, 221                                                                          | ? leidyi .....                     | 39                      |
| Nassa .....                         | 212, 214                                                                                   | rockfordensis .....                | 40                      |
| intestriata .....                   | 212                                                                                        | springeri .....                    | 121                     |
| interstriata .....                  | 214                                                                                        | danvillensis .....                 | 144, 165                |
| pedroana .....                      | 212, 214                                                                                   | dekayi .....                       | 104                     |
| Natica .....                        | 208, 210, 211, 212, 213, 214, 217, 219, 223, 226, 236                                      | var. montanaensis .....            | 104, 265                |
| acutispira .....                    | 48                                                                                         | digonus .....                      | 42                      |
| alabamensis .....                   | 221                                                                                        | (Discites) disciformis .....       | 39, 84                  |
| alveata .....                       | 211, 213, 221                                                                              | ornatus var. amplus .....          | 39                      |
| ambigua .....                       | 14, 48                                                                                     | (Discus) digonus .....             | 25                      |
| collina .....                       | 219                                                                                        | planorbiformis .....               | 25                      |
| concinna .....                      | 13                                                                                         | sangamonensis .....                | 25                      |
| erecta .....                        | 221                                                                                        | trisulcatus .....                  | 25                      |
| geniculata .....                    | 212, 214                                                                                   | divians .....                      | 121                     |
| gibbosa .....                       | 211, 213, 221                                                                              | elegans .....                      | 104                     |
| inesana .....                       | 50, 217                                                                                    | var. nebrascensis .....            | 29                      |
| indurata .....                      | 208                                                                                        | (Endolobus) peramplus .....        | 39                      |
| ? lella .....                       | 236                                                                                        | spectabilis .....                  | 45                      |
| limula .....                        | 219                                                                                        | eocentricus .....                  | 19, 20, 33              |
| minima .....                        | 221                                                                                        | forbesianus .....                  | 179                     |
| moreauensis .....                   | 14                                                                                         | globatus .....                     | 45                      |
| obliquata .....                     | 13                                                                                         | lamarekii .....                    | 222                     |
| occidentalis .....                  | 14, 231                                                                                    | lasallensis .....                  | 39, 87                  |
| oocyna .....                        | 212, 214                                                                                   | missouriensis .....                | 179                     |
| ostites ? .....                     | 211, 213                                                                                   | occidentalis .....                 | 74                      |
| orientalis .....                    | 210                                                                                        | planorbiformis .....               | 46                      |
| paludineformis .....                | 13                                                                                         | ponderosus .....                   | 74                      |
| saxea .....                         | 206                                                                                        | sangamonensis .....                | 46                      |
| ? scalaris .....                    | 210                                                                                        | (Solenochellus) collectus .....    | 65, 84                  |
| subcrassa .....                     | 15                                                                                         | leideyi .....                      | 84                      |
| syriaca .....                       | 208                                                                                        | spectabilis .....                  | 25                      |
| texana .....                        | 219                                                                                        | subglobosus .....                  | 25                      |
| tuomeyana .....                     | 16, 48                                                                                     | (Temnochellus) coxanus .....       | 84                      |
| Naticidae .....                     | 102, 111, 132, 264                                                                         | latus .....                        | 87                      |
| Naticina obliqua .....              | 221                                                                                        | niotensis .....                    | 39, 84                  |
| Naticopsis .....                    | 25, 27, 46, 80, 86, 132, 136, 152, 164, 165, 179                                           | winalowi .....                     | 87                      |
| aequistriata .....                  | 80                                                                                         | (Temnochilus) coxanus .....        | 65                      |
| altonensis .....                    | 86, 152                                                                                    | latus .....                        | 65                      |
| hollidayi .....                     | 25                                                                                         | winalowi .....                     | 65                      |
| ? (Idonearca) humilis .....         | 80                                                                                         | tenui-planatus .....               | 237                     |
| levis .....                         | 67, 80                                                                                     | (Trematodiscus) sulcatus .....     | 40                      |
| littonana var. genevieveensis ..... | 40                                                                                         | trisulcatus .....                  | 42                      |
| monilifera .....                    | 152, 165                                                                                   | winalowi .....                     | 179                     |
| nana .....                          | 46, 132, 179                                                                               | Navicula bacillum .....            | 229                     |
| nodosus .....                       | 25                                                                                         | scalprum .....                     | 229                     |
| (Platystoma) aequistriata .....     | 67                                                                                         | semen .....                        | 229                     |
| remex .....                         | 136, 164                                                                                   | sifcula .....                      | 229                     |
| subovatus .....                     | 86                                                                                         | sigma .....                        | 229                     |
| (Trachydomia) nodosa .....          | 46                                                                                         | Nemra .....                        | 101, 260, 263, 264, 272 |
| var. hollidayi .....                | 46                                                                                         | aequivalvis .....                  | 272                     |
| ventrica .....                      | 86                                                                                         | fibrosa .....                      | 48                      |
| wheleri .....                       | 86, 179                                                                                    | longirostra .....                  | 260, 263                |
| var. .....                          | 152                                                                                        | moreauensis .....                  | 101, 264                |
| Nautillidae .....                   | 33, 63, 104, 121, 132, 265                                                                 | ventricosa .....                   | 101                     |
| Nautilina .....                     | 106                                                                                        | Neithea .....                      | 215, 218, 266           |
| Nautilus .....                      | 25, 27, 29, 33, 39, 42, 45, 46, 65, 74, 84, 92, 93, 104, 132, 144, 165, 179, 245, 258, 265 | occidentalis .....                 | 215, 218                |
| —— (f) .....                        | 256                                                                                        | quinquecostata .....               | 266                     |
| angustatus .....                    | 50, 206                                                                                    | texana .....                       | 218                     |
| campbelli .....                     | 27, 93                                                                                     | Nematocrinus .....                 | 40                      |
| chesterensis .....                  | 25, 45                                                                                     | Nemoea .....                       | 267                     |
|                                     |                                                                                            | cretacea .....                     | 267                     |
|                                     |                                                                                            | Nemocardium .....                  | 99                      |
|                                     |                                                                                            | Nemodon .....                      | 98, 267                 |
|                                     |                                                                                            | angulatum .....                    | 267                     |

|                                                              | Page.              |                                                              | Page.                               |
|--------------------------------------------------------------|--------------------|--------------------------------------------------------------|-------------------------------------|
| Nemodon brevifrons.....                                      | 267                | Nucula .. 73, 86, 92, 98, 116, 147, 155, 163, 178, 194, 197, |                                     |
| eufaulensis.....                                             | 267                | 207, 208, 209, 213, 224, 247, 263, 267, 271                  |                                     |
| sulcatinus.....                                              | 98                 | — ? .....                                                    | 194                                 |
| Nemophora floridana.....                                     | 220                | abrupta, Conrad .....                                        | 209                                 |
| Neptuna impressa.....                                        | 49                 | Dana .....                                                   | 224, 225                            |
| Neptunella.....                                              | 103                | (Acila) conradi .....                                        | 50                                  |
| Nerinea.....                                                 | 208, 209, 210, 219 | ? anodontoides .....                                         | 69                                  |
| — ? .....                                                    | 210                | bellastriata .....                                           | 159                                 |
| abbreviata.....                                              | 210                | beyrichi .....                                               | 51, 73, 85                          |
| cochleiformis.....                                           | 210                | cancellata .....                                             | 15, 96                              |
| cretacea.....                                                | 209                | circo .....                                                  | 271                                 |
| orientalis.....                                              | 210                | concinna .....                                               | 225                                 |
| rhamdunensis.....                                            | 208                | crebrilineata .....                                          | 208                                 |
| schottii .....                                               | 219                | cultelliformis .....                                         | 220                                 |
| syriaca.....                                                 | 208, 210           | decisa .....                                                 | 213                                 |
| Nerita.....                                                  | 180                | divaricata .....                                             | 50, 206                             |
| — ? .....                                                    | 180                | equilateralis.....                                           | 15                                  |
| (Nereis) densata.....                                        | 48                 | evansi.....                                                  | 15                                  |
| Neritella.....                                               | 28, 34             | gabbana .....                                                | 267                                 |
| nebrascensis.....                                            | 28, 34, 49         | glendonensis .....                                           | 225                                 |
| (Nereis) densata.....                                        | 48                 | haydeni.....                                                 | 159                                 |
| Neritide.....                                                | 34, 133, 134, 180  | impressa.....                                                | 206, 221                            |
| Neritina .. 127, 133, 134, 136, 137, 141, 143, 158, 161, 169 |                    | insularis .....                                              | 197                                 |
| bannisteri.....                                              | 158, 167           | iowensis .....                                               | 116                                 |
| bruneri.....                                                 | 166, 169           | kazanensis .....                                             | 51                                  |
| (Dostia?) bellatula .....                                    | 76                 | levatiforme .....                                            | 197                                 |
| carditoides .....                                            | 76                 | longifrons.....                                              | 267                                 |
| (patelliformis).....                                         | 76                 | magna .....                                                  | 220                                 |
| incompta .....                                               | 143                | media .....                                                  | 220                                 |
| naticiformis .....                                           | 141, 161, 168      | minuta.....                                                  | 247                                 |
| nebrascensis .....                                           | 49, 167            | monmouthensis .....                                          | 267                                 |
| (Neritella) bannisteri.....                                  | 76                 | myiformis.....                                               | 207                                 |
| pisum .....                                                  | 76                 | obsoletastriata .....                                        | 16, 96                              |
| phaseolaris.....                                             | 127, 133           | ? obtenta .....                                              | 209                                 |
| pisiformis .....                                             | 76, 158            | ovula .....                                                  | 220                                 |
| pisum .....                                                  | 143                | parallela .....                                              | 207                                 |
| powelli .....                                                | 136                | parva .....                                                  | 88, 220                             |
| (Velatella) baptista .....                                   | 141, 161, 169      | pectuncularis .....                                          | 220                                 |
| bellatula .....                                              | 158, 167           | penita.....                                                  | 49                                  |
| carditoides .....                                            | 134, 158, 167      | percrassa.....                                               | 267                                 |
| patelliformis.....                                           | 143                | perdita .....                                                | 208                                 |
| var. webe-<br>rensis .....                                   | 143                | perequalis.....                                              | 267                                 |
| volvilineata .....                                           | 137, 161, 169      | perobliqua .....                                             | 207                                 |
| Neritopsis? tuomeyana.....                                   | 48                 | perovata .....                                               | 208                                 |
| Neuropteris.....                                             | 149, 246           | perumbonata.....                                             | 147, 160                            |
| angulata.....                                                | 246                | plana .....                                                  | 220                                 |
| hirsuta .....                                                | 149                | planimarginata.....                                          | 98, 263                             |
| rarinervis.....                                              | 149                | planomarginata .....                                         | 15                                  |
| Neverita gibbosa .....                                       | 221                | plicata .....                                                | 220                                 |
| Nipterocrinus .....                                          | 54, 82             | pulcherrima.....                                             | 220                                 |
| arboreus .....                                               | 82                 | rescuensis.....                                              | 194                                 |
| wachsmuthi .....                                             | 54, 82             | scitula .....                                                | 15                                  |
| Nodosaria.....                                               | 219                | semen .....                                                  | 229                                 |
| texana.....                                                  | 219                | slackiana .....                                              | 267                                 |
| Næggerathia.....                                             | 226                | submucronata.....                                            | 207                                 |
| elongata.....                                                | 226                | subnasuta.....                                               | 13                                  |
| media .....                                                  | 226                | subplana .....                                               | 15, 96                              |
| spatulata .....                                              | 226                | syriaca .....                                                | 207                                 |
| Notocoeli.....                                               | 35                 | traekana .....                                               | 17, 92                              |
| Notomya.....                                                 | 224                | ventricosa.....                                              | 13, 73, 155, 178                    |
| Notosiphites.....                                            | 35                 | Nuculana .....                                               | 44, 73, 87, 98, 140, 147, 160, 161, |
| Nucleospira.....                                             | 193                | 178, 211, 260, 263, 267, 271                                 |                                     |
| barrii .....                                                 | 116                | albaria .....                                                | 271                                 |
| concinni .....                                               | 193                | bellistriata .....                                           | 178                                 |
|                                                              |                    | var. attenuata.....                                          | 72                                  |



|                                            | Page.                           |                                             | Page.               |
|--------------------------------------------|---------------------------------|---------------------------------------------|---------------------|
| <i>Nuculana bisulcata</i> .....            | 47, 98, 263                     | † <i>Odontobasis formosa</i> .....          | 141, 162            |
| <i>compressifrons</i> .....                | 268                             | <i>Odontocephalus</i> .....                 | 58                  |
| <i>compes.</i> .....                       | 220                             | <i>Odontopteris</i> .....                   | 149                 |
| <i>cutelliformis</i> .....                 | 220                             | <i>subcuneata</i> .....                     | 149                 |
| † <i>curta</i> .....                       | 44                              | <i>Ogygia</i> .....                         | 190, 234            |
| <i>decisa</i> .....                        | 211                             | <i>parabola</i> .....                       | 234                 |
| † <i>equilateralis</i> .....               | 98                              | † <i>problematica</i> .....                 | 190                 |
| <i>inclara</i> .....                       | 140, 160                        | <i>producta</i> .....                       | 234                 |
| <i>longifrons</i> .....                    | 47                              | † <i>spinosa</i> .....                      | 190                 |
| <i>magna</i> .....                         | 220                             | <i>Olenellus</i> .....                      | 126, 129, 189       |
| <i>media</i> .....                         | 220                             | <i>gilberti</i> .....                       | 126, 129, 189       |
| <i>obesa</i> .....                         | 147, 163                        | <i>howelli</i> .....                        | 129, 189            |
| <i>oregona</i> .....                       | 49, 220                         | <i>iddingsi</i> .....                       | 189                 |
| <i>ovula</i> .....                         | 220                             | <i>powelli</i> .....                        | 126                 |
| <i>parva</i> .....                         | 220                             | <i>Olenus (Olenellus) gilberti</i> .....    | 88                  |
| <i>penita</i> .....                        | 40                              | <i>howelli</i> .....                        | 88                  |
| <i>pinnaeformis</i> .....                  | 47, 268                         | <i>Oligoporus</i> .....                     | 25, 43, 54, 83      |
| <i>plana</i> .....                         | 220                             | <i>coreyi</i> .....                         | 64                  |
| <i>plicata</i> .....                       | 220                             | <i>danæ</i> .....                           | 43, 60              |
| <i>protecta</i> .....                      | 47, 267                         | <i>nobilus</i> .....                        | 54, 83              |
| <i>pulcherrima</i> .....                   | 220                             | <i>Oligoptych.</i> .....                    | 101                 |
| <i>semen</i> .....                         | 220                             | <i>Oliva ancillariæformis</i> .....         | 50                  |
| <i>slackiana</i> .....                     | 47                              | <i>phillipsi</i> .....                      | 222                 |
| <i>subangulata</i> .....                   | 47                              | <i>Olivella ancillariiformis</i> .....      | 50                  |
| <i>subequilata</i> .....                   | 260, 263                        | <i>Olivula ? plicata</i> .....              | 222                 |
| <i>subnasuta</i> .....                     | 98                              | <i>punctulifera</i> .....                   | 222                 |
| <i>willamettensis</i> .....                | 49                              | <i>Ollacrinus</i> .....                     | 42                  |
| <i>Nuculanidae</i> .....                   | 32, 260                         | <i>Omala</i> .....                          | 100                 |
| <i>Nuculaninae</i> .....                   | 32, 33                          | <i>Omphiscola</i> .....                     | 106                 |
| <i>Nucularia</i> .....                     | 268, 271                        | <i>Onychaster</i> .....                     | 61, 63, 83          |
| <i>papyria</i> .....                       | 268                             | <i>barrii</i> .....                         | 83                  |
| <i>secunda</i> .....                       | 271                             | <i>flexilis</i> .....                       | 61                  |
| <i>Nuculide</i> .....                      | 98, 267, 271                    | <i>flexilis</i> .....                       | 83                  |
| <i>Nuculites</i> .....                     | 235                             | <i>Onychocrinus</i> .....                   | 40, 43, 60, 84, 154 |
| <i>triangulus</i> .....                    | 235                             | <i>diversus</i> .....                       | 40, 60              |
| <i>Nullipora ? obtexta</i> .....           | 119                             | <i>exculptus</i> .....                      | 83, 154             |
| <i>Nummulites</i> .....                    | 209                             | <i>monroensis</i> .....                     | 43                  |
| <i>arbiensis</i> .....                     | 209                             | <i>norwoodi</i> .....                       | 43                  |
| <i>floridana</i> .....                     | 220                             | <i>ramulosus</i> .....                      | 154                 |
| <i>mantelli</i> .....                      | 222                             | <i>whitfieldi</i> .....                     | 84                  |
| <i>Nyassa</i> .....                        | 194                             | <i>Operculatum planulatum</i> .....         | 222                 |
| <i>parva</i> .....                         | 194                             | <i>Omphalotrochus</i> .....                 | 30                  |
| O.                                         |                                 |                                             |                     |
| <i>Obeliscus melanellus</i> .....          | 221                             | <i>Ophileta</i> .....                       | 55, 108             |
| <i>pygmaeus</i> .....                      | 221                             | <i>complanata</i> var. <i>nana</i> .....    | 108                 |
| <i>striatus</i> .....                      | 221                             | <i>owenana</i> .....                        | 55                  |
| <i>Obolella</i> .....                      | 27, 31, 189, 190, 198, 233, 261 | <i>Ophioderma</i> .....                     | 158                 |
| — ?.....                                   | 198                             | † <i>bridgerensis</i> .....                 | 158                 |
| † <i>ambigua</i> .....                     | 190                             | <i>Ophiuroidea</i> .....                    | 78                  |
| <i>chromatica</i> .....                    | 199                             | <i>Opis</i> .....                           | 208, 209            |
| <i>discoidea</i> .....                     | 189, 233                        | <i>equalis</i> .....                        | 209                 |
| <i>nana</i> .....                          | 27, 31, 261                     | <i>undatus</i> .....                        | 208                 |
| <i>polita</i> .....                        | 261                             | <i>Orbicula</i> .....                       | 207, 208, 210       |
| <i>transversa</i> .....                    | 198                             | ? —.....                                    | 210                 |
| <i>Obolide</i> .....                       | 261                             | <i>lugubris</i> .....                       | 49                  |
| <i>Obolus</i> .....                        | 56, 259, 261                    | <i>multilineata</i> .....                   | 49                  |
| <i>pectenoides</i> .....                   | 259                             | <i>prima</i> .....                          | 250                 |
| † <i>pectenoides</i> .....                 | 261                             | <i>subobliqua</i> .....                     | 207                 |
| ( <i>Trimerella</i> ) <i>conradi</i> ..... | 56                              | † <i>syriaca</i> .....                      | 209                 |
| <i>Obovaria</i> .....                      | 105                             | <i>Orbiculoidea</i> .....                   | 72, 89              |
| † <i>Odontobasis</i> .....                 | 103, 137, 141, 162              | — ?.....                                    | 72                  |
| <i>buccinoidea</i> .....                   | 137                             | <i>Orbitolites discoidea</i> .....          | 220                 |
| <i>buccinoides</i> .....                   | 162                             | <i>interstitia</i> .....                    | 220                 |
| <i>constricta</i> .....                    | 103                             | ( <i>Orbitoides</i> ) <i>mantelli</i> ..... | 222                 |
|                                            |                                 | <i>Orbitulites ? reticulata</i> .....       | 247, 248            |
|                                            |                                 | <i>taxanus</i> .....                        | 47                  |

|                                                    | Page.                                                                                                                     |                                                  | Page.                                                                                                                                                |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Orthia</i> .....                                | 29, 30, 57, 58, 62, 72, 78, 85, 109, 116, 129,<br>130, 131, 148, 151, 165, 177, 189, 190, 192,<br>198, 234, 235, 247, 248 | <i>Othoceras blakei</i> .....                    | 119                                                                                                                                                  |
| —— ? .....                                         | 30, 58, 248                                                                                                               | ( <i>Cameroceas</i> ) <i>colom</i> .....         | 129                                                                                                                                                  |
| <i>arachnoides</i> .....                           | 233                                                                                                                       | <i>colom</i> .....                               | 129                                                                                                                                                  |
| <i>bellula</i> .....                               | 78                                                                                                                        | <i>cribrosum</i> .....                           | 74                                                                                                                                                   |
| <i>biforata</i> var. <i>acutillirata</i> .....     | 148                                                                                                                       | <i>crebristriatum</i> .....                      | 39, 91                                                                                                                                               |
| <i>lynx</i> .....                                  | 130                                                                                                                       | <i>eurekensis</i> .....                          | 196                                                                                                                                                  |
| <i>billingsi</i> .....                             | 196                                                                                                                       | <i>expansum</i> .....                            | 25, 27, 44                                                                                                                                           |
| <i>borealis</i> .....                              | 78                                                                                                                        | <i>filogramma</i> .....                          | 67                                                                                                                                                   |
| <i>carbonaria</i> .....                            | 72, 85                                                                                                                    | <i>jolietensis</i> .....                         | 39, 91                                                                                                                                               |
| <i>coloradoensis</i> .....                         | 66                                                                                                                        | <i>kingii</i> .....                              | 109                                                                                                                                                  |
| <i>crenistris</i> .....                            | 243                                                                                                                       | <i>marginale</i> .....                           | 247                                                                                                                                                  |
| <i>cuneata</i> .....                               | 250                                                                                                                       | <i>medullare</i> .....                           | 91                                                                                                                                                   |
| <i>electra</i> .....                               | 129                                                                                                                       | <i>multicameratum</i> .....                      | 191                                                                                                                                                  |
| <i>ella</i> .....                                  | 78                                                                                                                        | <i>nobile</i> .....                              | 39                                                                                                                                                   |
| <i>emacerata</i> .....                             | 78                                                                                                                        | <i>nova mexicana</i> .....                       | 243                                                                                                                                                  |
| <i>eurekensis</i> .....                            | 189                                                                                                                       | <i>oncidionae</i> .....                          | 187                                                                                                                                                  |
| <i>fascicosta</i> .....                            | 78                                                                                                                        | ( <i>Ormoceras</i> ) <i>beckii</i> .....         | 55                                                                                                                                                   |
| <i>hamburgensis</i> .....                          | 190                                                                                                                       | <i>ortoni</i> .....                              | 68, 79                                                                                                                                               |
| <i>hibrida</i> .....                               | 57                                                                                                                        | <i>rundolphensis</i> .....                       | 198                                                                                                                                                  |
| <i>impressa</i> .....                              | 192                                                                                                                       | <i>rushensis</i> .....                           | 87, 179                                                                                                                                              |
| <i>insculpta</i> .....                             | 78                                                                                                                        | <i>subbuculum</i> .....                          | 39                                                                                                                                                   |
| <i>iowensis</i> .....                              | 62, 148                                                                                                                   | <i>undulatum</i> .....                           | 247                                                                                                                                                  |
| var. <i>furnarius</i> .....                        | 58                                                                                                                        | <i>winchellii</i> .....                          | 39, 91                                                                                                                                               |
| <i>lonensis</i> .....                              | 190                                                                                                                       | <i>Orthoceras</i> .....                          | 191                                                                                                                                                  |
| <i>mcfarlanei</i> .....                            | 58, 62, 192                                                                                                               | <i>Orthoceratitides</i> .....                    | 100, 110                                                                                                                                             |
| <i>micellini</i> .....                             | 109                                                                                                                       | <i>Orthonema</i> .....                           | 27, 44, 74, 80, 88                                                                                                                                   |
| <i>occidentalis</i> .....                          | 78, 130, 148                                                                                                              | <i>conica</i> .....                              | 40, 88                                                                                                                                               |
| <i>peccosii</i> .....                              | 131, 177, 243                                                                                                             | <i>newberryi</i> .....                           | 67, 88                                                                                                                                               |
| <i>perveta</i> .....                               | 190                                                                                                                       | <i>salteri</i> .....                             | 48                                                                                                                                                   |
| <i>plicatella</i> .....                            | 78, 130                                                                                                                   | <i>subtenuata</i> .....                          | 51, 74                                                                                                                                               |
| ( <i>Platystrophia</i> ) <i>acutillirata</i> ..... | 78                                                                                                                        | <i>Orthonota</i> .....                           | 116                                                                                                                                                  |
| <i>biforata</i> .....                              | 78                                                                                                                        | <i>Orthomychia</i> .....                         | 40                                                                                                                                                   |
| <i>dentata</i> .....                               | 78                                                                                                                        | <i>Ostraca</i> .....                             | 227                                                                                                                                                  |
| <i>laticosta</i> .....                             | 78                                                                                                                        | <i>Ostracoda</i> .....                           | 128                                                                                                                                                  |
| <i>lynx</i> .....                                  | 78                                                                                                                        | <i>Ostrea</i> .....                              | 28, 33, 83, 94, 105, 111, 123, 136, 142,<br>151, 158, 160, 172, 173, 205, 208, 209,<br>211, 213, 216, 217, 219, 223, 226, 227,<br>262, 268, 270, 271 |
| <i>pogonipensis</i> .....                          | 234                                                                                                                       | —— ? .....                                       | 97                                                                                                                                                   |
| <i>resupinata</i> ? .....                          | 235                                                                                                                       | <i>alabamensis</i> .....                         | 237                                                                                                                                                  |
| <i>resupinoides</i> .....                          | 151                                                                                                                       | ( <i>Alectryonia</i> ) <i>bellaplicata</i> ..... | 163                                                                                                                                                  |
| <i>retrota</i> .....                               | 78                                                                                                                        | <i>blackii</i> .....                             | 151, 158                                                                                                                                             |
| <i>subelliptica</i> .....                          | 116                                                                                                                       | <i>larva</i> .....                               | 173                                                                                                                                                  |
| <i>subcarinata</i> .....                           | 57                                                                                                                        | <i>linguafelis</i> .....                         | 271                                                                                                                                                  |
| <i>subquadrata</i> .....                           | 78, 148                                                                                                                   | <i>procumbens</i> .....                          | 172                                                                                                                                                  |
| <i>testudinaria</i> .....                          | 130, 190, 248 ?                                                                                                           | <i>sannionis</i> .....                           | 136, 163                                                                                                                                             |
| <i>thiemei</i> .....                               | 116, 165                                                                                                                  | <i>americana</i> .....                           | 172                                                                                                                                                  |
| <i>tricenaria</i> .....                            | 190                                                                                                                       | <i>anomisiformis</i> .....                       | 172                                                                                                                                                  |
| <i>tulliensis</i> .....                            | 192                                                                                                                       | <i>anomioidees</i> .....                         | 76, 158, 172                                                                                                                                         |
| <i>umbraculum</i> ? .....                          | 232                                                                                                                       | <i>apressa</i> .....                             | 172                                                                                                                                                  |
| <i>Orthisina</i> .....                             | 257                                                                                                                       | <i>aiwoodi</i> .....                             | 237, 238                                                                                                                                             |
| —— ? .....                                         | 257                                                                                                                       | <i>barrandei</i> .....                           | 172                                                                                                                                                  |
| <i>crassa</i> .....                                | 19, 20                                                                                                                    | <i>bella</i> .....                               | 172, 219                                                                                                                                             |
| <i>missouriana</i> .....                           | 52                                                                                                                        | <i>bellarugosa</i> .....                         | 172                                                                                                                                                  |
| <i>missouriensis</i> .....                         | 20                                                                                                                        | <i>belliplicata</i> .....                        | 172                                                                                                                                                  |
| <i>shumardiana</i> .....                           | 20                                                                                                                        | <i>blackii</i> .....                             | 172                                                                                                                                                  |
| <i>umbraculum</i> .....                            | 20, 274                                                                                                                   | <i>breweri</i> .....                             | 172                                                                                                                                                  |
| <i>Orthoceras</i> .....                            | 25, 27, 36, 39, 44, 55, 74, 79, 87, 91, 94, 109,<br>110, 126, 129, 154, 179, 187, 195, 198, 248                           | <i>borealis</i> .....                            | 237                                                                                                                                                  |
| —— ? .....                                         | 191, 198, 258                                                                                                             | <i>bryani</i> .....                              | 172                                                                                                                                                  |
| <i>anellum</i> .....                               | 55                                                                                                                        | <i>bourgeoisii</i> .....                         | 236                                                                                                                                                  |
| <i>angulatum</i> .....                             | 91                                                                                                                        | <i>boussingaultii</i> .....                      | 206                                                                                                                                                  |
| <i>annulato-costatum</i> .....                     | 44                                                                                                                        | <i>carinata</i> .....                            | 172, 229                                                                                                                                             |
| <i>annulatum</i> .....                             | 154                                                                                                                       | <i>carolinensis</i> .....                        | 172, 237                                                                                                                                             |
| <i>annulocostatum</i> .....                        | 27                                                                                                                        | <i>compressirostra</i> .....                     | 237                                                                                                                                                  |
| <i>baculum</i> .....                               | 23, 94                                                                                                                    | <i>conchaphila</i> .....                         | 236                                                                                                                                                  |

|                                                | Page.                  |
|------------------------------------------------|------------------------|
| <i>strea confragosa</i> .....                  | 172                    |
| <i>congesta</i> .....                          | 97, 172, 233, 273, 274 |
| <i>contracta</i> .....                         | 215, 219, 237          |
| <i>convexa</i> .....                           | 172                    |
| <i>cortex</i> .....                            | 133, 172, 219          |
| <i>corticosa</i> .....                         | 209                    |
| <i>crenulata</i> .....                         | 172                    |
| <i>crenulimarginata</i> .....                  | 172, 266               |
| <i>cretacea</i> .....                          | 172, 237               |
| <i>denticulifera</i> .....                     | 172, 266               |
| <i>disparilis</i> .....                        | 238                    |
| <i>diluviana</i> .....                         | 172                    |
| <i>divaricata</i> .....                        | 137                    |
| <i>elegantula</i> .....                        | 173                    |
| <i>engelmanni</i> .....                        | 22, 95, 173            |
| <i>everea</i> .....                            | 220, 237               |
| <i>exogyrella</i> .....                        | 172                    |
| <i>falcata</i> .....                           | 172                    |
| <i>falciformis</i> .....                       | 237                    |
| <i>franklini</i> .....                         | 172                    |
| <i>fundata</i> .....                           | 238                    |
| <i>gabbana</i> .....                           | 28, 172                |
| <i>gallus</i> .....                            | 238                    |
| <i>georgiana</i> .....                         | 237                    |
| <i>glabra</i> .....                            | 18, 160, 168, 173      |
| <i>glauconoides</i> .....                      | 271                    |
| <i>glendiformis</i> .....                      | 270                    |
| ( <i>Gryphæa</i> ?) <i>patina</i> .....        | 97                     |
| <i>uniformis</i> .....                         | 93                     |
| ( <i>Gryphæostrea</i> ?) <i>subulata</i> ..... | 97                     |
| <i>heermanni</i> .....                         | 212, 213, 238          |
| <i>idraensis</i> .....                         | 71, 173                |
| <i>inornata</i> .....                          | 21, 97, 173            |
| <i>insecura</i> .....                          | 136                    |
| <i>larva</i> .....                             | 266                    |
| <i>lateralis</i> .....                         | 173                    |
| <i>linguloides</i> .....                       | 206                    |
| <i>littlei</i> .....                           | 173                    |
| <i>ingubris</i> .....                          | 83, 173, 219           |
| <i>lurida</i> .....                            | 238                    |
| <i>lyoni</i> .....                             | 173                    |
| <i>malleiformis</i> .....                      | 173                    |
| <i>marahii</i> .....                           | 241, 242, 243          |
| <i>mesenterica</i> .....                       | 173                    |
| <i>mortoni</i> .....                           | 173, 237               |
| <i>multifurcata</i> .....                      | 173, 219               |
| <i>nasuta</i> .....                            | 173                    |
| <i>obrutus</i> .....                           | 209                    |
| <i>orientalis</i> .....                        | 209                    |
| <i>owenana</i> .....                           | 173                    |
| <i>panda</i> .....                             | 173, 266               |
| <i>pandæformis</i> .....                       | 173                    |
| <i>panzana</i> .....                           | 217, 238               |
| <i>patercula</i> .....                         | 172                    |
| <i>patina</i> .....                            | 16, 173                |
| <i>peculiaris</i> .....                        | 173                    |
| <i>pellucida</i> .....                         | 97, 173                |
| <i>peroracea</i> .....                         | 238                    |
| <i>planovata</i> .....                         | 173                    |
| <i>plumosa</i> .....                           | 173, 266               |
| <i>prudentia</i> .....                         | 133, 173               |
| <i>quadriplicata</i> .....                     | 142, 173               |
| <i>robusta</i> .....                           | 173, 219               |
| <i>sanlonis</i> .....                          | 173                    |
| <i>scapha</i> .....                            | 206                    |

|                                    | Page.                                         |
|------------------------------------|-----------------------------------------------|
| <i>Ostrea sculpturata</i> .....    | 238                                           |
| <i>sellaformis</i> .....           | 205, 237                                      |
| <i>soleniscus</i> .....            | 66, 76, 158, 173                              |
| <i>strigilecula</i> .....          | 133, 172, 262                                 |
| <i>subalata</i> .....              | 173                                           |
| <i>subfalcata</i> .....            | 238                                           |
| <i>subjecta</i> .....              | 217, 238                                      |
| <i>subovata</i> .....              | 173, 255                                      |
| <i>subepatulata</i> .....          | 173, 219, 266                                 |
| <i>subtrigonalis</i> .....         | 105, 168, 173, 256                            |
| <i>syriaca</i> .....               | 206                                           |
| <i>tayloriana</i> .....            | 238                                           |
| <i>tecticostrata</i> .....         | 173, 266                                      |
| <i>titan</i> .....                 | 216, 238                                      |
| <i>thiræ</i> .....                 | 237                                           |
| <i>toroso</i> .....                | 173                                           |
| <i>translucida</i> .....           | 18, 173                                       |
| <i>trigonalis</i> .....            | 237                                           |
| <i>tuomeyi</i> .....               | 173, 237                                      |
| <i>uniformis</i> .....             | 173                                           |
| <i>veatchii</i> .....              | 238                                           |
| <i>veleniana</i> .....             | 219, 238                                      |
| <i>velicata</i> .....              | 173, 219                                      |
| <i>vespertina</i> .....            | 211, 213, 219, 238                            |
| <i>vicksburgensis</i> .....        | 237                                           |
| <i>virgata</i> .....               | 206, 209                                      |
| <i>virginiana</i> .....            | 238                                           |
| <i>virginica</i> .....             | 238                                           |
| <i>var. californica</i> .....      | 243                                           |
| <i>vomer</i> .....                 | 173                                           |
| <i>wyomingensis</i> .....          | 77                                            |
| <i>Ostreidae</i> .....             | 30, 33, 97, 105, 111, 133, 262, 266, 270, 271 |
| <i>Otozamites macombii</i> .....   | 246                                           |
| <i>Ovales</i> .....                | 34                                            |
| <i>Oxysteles</i> .....             | 180                                           |
| <i>Oxyrhina mantelli</i> .....     | 246                                           |
| <i>Oxytoma</i> .....               | 33, 49, 97, 142, 151, 153, 158, 262           |
| P.                                 |                                               |
| <i>Pachycardium</i> .....          | 90, 268                                       |
| <i>burlingtonense</i> .....        | 268                                           |
| <i>Pachydesma</i> .....            | 215, 217                                      |
| <i>inesana</i> .....               | 215, 217                                      |
| <i>Pachydomus</i> .....            | 225                                           |
| <i>antiquatus</i> .....            | 225                                           |
| <i>cuneatus</i> .....              | 225                                           |
| <i>ovis</i> .....                  | 225                                           |
| <i>ovalla</i> .....                | 224                                           |
| <i>pusillus</i> .....              | 224                                           |
| <i>sacculus</i> .....              | 224                                           |
| <i>Pachymya</i> .....              | 143, 151, 158                                 |
| <i>antennensis</i> .....           | 143                                           |
| ? <i>compacta</i> .....            | 151, 158                                      |
| ? <i>herseyi</i> .....             | 143                                           |
| ? <i>truncata</i> .....            | 70                                            |
| <i>Pachyodon</i> .....             | 101, 103                                      |
| <i>Pachyphyllum woodmani</i> ..... | 192                                           |
| <i>Pachytherus</i> .....           | 99                                            |
| <i>Palæonello</i> .....            | 89                                            |
| <i>bedfordensis</i> .....          | 89                                            |
| <i>Palæacis</i> .....              | 154                                           |
| <i>cuneatus</i> .....              | 154                                           |
| <i>cymbia</i> .....                | 52                                            |
| <i>obtusæ</i> .....                | 52                                            |
| <i>umbonata</i> .....              | 52                                            |
| <i>Palæacmea</i> .....             | 188                                           |

|                                                                | Page.                   |                                               | Page.                                                                                |
|----------------------------------------------------------------|-------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------|
| <i>Palaeaster</i> .....                                        | 78                      | <i>Paradoxides acadicus</i> .....             | 198                                                                                  |
| <i>dyeri</i> .....                                             | 69, 78                  | <i>eteminicus</i> .....                       | 198                                                                                  |
| <i>granulosus</i> .....                                        | 78                      | <i>harlani</i> .....                          | 199                                                                                  |
| <i>incomptus</i> .....                                         | 70, 78                  | <i>lamellatus</i> .....                       | 199                                                                                  |
| <i>jamesii</i> .....                                           | 78                      | ? <i>nevadensis</i> .....                     | 65, 108                                                                              |
| <i>shaefferi</i> .....                                         | 78                      | <i>Paramithrax</i> .....                      | 159                                                                                  |
| <i>Palaechinidae</i> .....                                     | 43                      | ? <i>walkeri</i> .....                        | 159                                                                                  |
| <i>Palaechinus</i> .....                                       | 23, 43, 83              | <i>Paranomia</i> .....                        | 205                                                                                  |
| <i>burlingtonensis</i> .....                                   | 23, 43                  | <i>lineata</i> .....                          | 205                                                                                  |
| <i>gracilis</i> .....                                          | 63, 83                  | <i>scabra</i> .....                           | 205                                                                                  |
| <i>Palaeocampa</i> .....                                       | 37, 47, 61              | <i>Parapholas</i> .....                       | 143, 272                                                                             |
| <i>anthrax</i> .....                                           | 37, 47                  | <i>kneiskerni</i> .....                       | 279                                                                                  |
| <i>Palaeocaridae</i> .....                                     | 87                      | <i>sphenoides</i> .....                       | 143                                                                                  |
| <i>Palaeocaris</i> .....                                       | 37, 46, 53, 61, 179     | <i>Pasceolus</i> .....                        | 56                                                                                   |
| <i>typus</i> .....                                             | 37, 46, 61, 179         | <i>dactyloides</i> .....                      | 56                                                                                   |
| <i>Palaeochorda</i> .....                                      | 259, 261                | <i>Pasithea aciculata</i> .....               | 221                                                                                  |
| <i>prima</i> .....                                             | 259, 261                | <i>lugubris</i> .....                         | 221                                                                                  |
| <i>Palaeocyclus</i> .....                                      | 62                      | <i>notata</i> .....                           | 221                                                                                  |
| <i>kirbyi</i> .....                                            | 62                      | <i>scale</i> .....                            | 221                                                                                  |
| <i>Palaeomanon</i> .....                                       | 192                     | <i>sulcata</i> .....                          | 220                                                                                  |
| <i>romeri</i> .....                                            | 192                     | <i>striata</i> .....                          | 220                                                                                  |
| <i>Palaeomoera</i> .....                                       | 100                     | <i>Patella</i> .....                          | 154                                                                                  |
| <i>Palaeophycus</i> .....                                      | 260, 261                | <i>levettii</i> .....                         | 154                                                                                  |
| <i>occidentalis</i> .....                                      | 260, 261                | <i>tenella</i> .....                          | 223                                                                                  |
| <i>Palaeophyllum</i> .....                                     | 155                     | <i>Patoceras</i> .....                        | 194                                                                                  |
| <i>divaricans</i> .....                                        | 155                     | <i>Patula</i> .....                           | 153                                                                                  |
| <i>Palasterina</i> .....                                       | 24                      | <i>Pecopectis</i> .....                       | 246                                                                                  |
| ( <i>Shoenaster</i> ) <i>fimbriata</i> .....                   | 24                      | <i>bullatus</i> .....                         | 246                                                                                  |
| <i>Pallurus</i> .....                                          | 143                     | <i>cycloloba</i> .....                        | 246                                                                                  |
| <i>pentangulatus</i> .....                                     | 143                     | <i>falcatus</i> .....                         | 246                                                                                  |
| <i>Pallium</i> .....                                           | 215, 216, 217           | <i>mexicana</i> .....                         | 246                                                                                  |
| <i>crassicaudo</i> .....                                       | 215                     | ? <i>odontopteroides</i> .....                | 231                                                                                  |
| <i>estrellanum</i> .....                                       | 215, 216, 217           | <i>undulata</i> .....                         | 231                                                                                  |
| <i>Palmula sagittaria</i> .....                                | 47                      | <i>var.</i> .....                             | 231                                                                                  |
| <i>Paludina conradi</i> .....                                  | 16                      | <i>Pecten</i> .....                           | 24, 30, 205, 207, 208, 211, 212,<br>213, 214, 215, 216, 217, 245, 260, 262, 268, 271 |
| <i>leai</i> .....                                              | 16                      | <i>acutiplicatus</i> .....                    | 30                                                                                   |
| <i>leidyi</i> .....                                            | 16                      | <i>affinis</i> .....                          | 40                                                                                   |
| <i>multilineata</i> .....                                      | 16, 221                 | <i>alpipectus</i> .....                       | 215                                                                                  |
| <i>peculiaris</i> .....                                        | 16                      | <i>alpipectus</i> .....                       | 217                                                                                  |
| <i>retusa</i> .....                                            | 16                      | <i>bella</i> .....                            | 40                                                                                   |
| <i>trochiformis</i> .....                                      | 16                      | <i>bellistriata</i> .....                     | 40                                                                                   |
| <i>vetula</i> .....                                            | 16, 221                 | <i>bellistriatus</i> .....                    | 40                                                                                   |
| <i>Pandora</i> .....                                           | 216                     | <i>broadheadii</i> .....                      | 51                                                                                   |
| <i>bilirata</i> .....                                          | 216                     | <i>calvatus</i> .....                         | 220                                                                                  |
| <i>Panopea</i> .....                                           | 207, 210, 217, 269, 271 | <i>catilliformis</i> .....                    | 212, 214                                                                             |
| <i>cooperi</i> .....                                           | 19                      | ( <i>Chlamys</i> ) <i>craticulus</i> .....    | 206                                                                                  |
| <i>decias</i> .....                                            | 269                     | <i>comptus</i> .....                          | 224, 226                                                                             |
| <i>elliptica</i> .....                                         | 271                     | <i>coosensis</i> .....                        | 256                                                                                  |
| <i>estrellana</i> .....                                        | 50                      | <i>delumbis</i> .....                         | 206                                                                                  |
| ( <i>myacites</i> ) <i>subelliptica</i> .....                  | 18                      | <i>deserti</i> .....                          | 211, 212, 217                                                                        |
| <i>occidentalis</i> .....                                      | 16                      | <i>discus</i> .....                           | 217                                                                                  |
| <i>orientalis</i> .....                                        | 210                     | <i>extenuatus</i> .....                       | 22, 40                                                                               |
| <i>pecterosa</i> .....                                         | 207                     | <i>hawni</i> .....                            | 51                                                                                   |
| <i>texana</i> .....                                            | 255                     | <i>humphreysii</i> .....                      | 205                                                                                  |
| <i>Papillina altilla</i> .....                                 | 222                     | <i>illawarrensis</i> .....                    | 226                                                                                  |
| <i>Papyridea</i> ( <i>Liopeistha</i> ) <i>elegantula</i> ..... | 47                      | <i>kneiskerni</i> .....                       | 271                                                                                  |
| <i>rostrata</i> .....                                          | 47                      | <i>lenuisculus</i> .....                      | 226                                                                                  |
| <i>sancti-sabae</i> .....                                      | 47                      | <i>magnolia</i> .....                         | 217                                                                                  |
| <i>Paracyclas</i> .....                                        | 138, 149, 194, 235      | <i>meekii</i> .....                           | 215, 217                                                                             |
| <i>elliptica</i> <i>var. occidentalis</i> .....                | 140                     | <i>missouriensis</i> ? .....                  | 51                                                                                   |
| <i>occidentalis</i> .....                                      | 194                     | <i>mitis</i> .....                            | 226                                                                                  |
| <i>peraceldens</i> .....                                       | 235                     | ( <i>Monotis</i> ?) <i>coloradensis</i> ..... | 245                                                                                  |
| <i>sabina</i> .....                                            | 138                     | <i>nebrascensis</i> .....                     | 15                                                                                   |
| <i>Paradoxides</i> .....                                       | 31, 108                 | <i>neglectus</i> .....                        | 51                                                                                   |
| <i>Pseudorhynchus</i> .....                                    | 108, 198, 199, 248      |                                               |                                                                                      |



|                                                   | Page.                              |                                                | Page.                             |
|---------------------------------------------------|------------------------------------|------------------------------------------------|-----------------------------------|
| <i>Pecten nevadanus</i> .....                     | 212, 214                           | <i>Pentremites norwoodii</i> .....             | 240, 251                          |
| <i>newberryi</i> .....                            | 260, 262                           | <i>pyriformis</i> .....                        | 149, 248                          |
| <i>obrutus</i> .....                              | 208                                | <i>sirius</i> .....                            | 118                               |
| <i>occidentalis</i> .....                         | 245, 274                           | <i>stelliformis</i> .....                      | 249, 251                          |
| <i>pablosis</i> .....                             | 216                                | <i>sulcatus</i> .....                          | 255                               |
| <i>planicostatus</i> .....                        | 266                                | ( <i>Tricoelocrinus</i> ) <i>obliquatus</i> .. | 91                                |
| <i>propatulus</i> .....                           | 49, 206                            | ( <i>Troostocrinus</i> ?) <i>woodmanii</i> ..  | 54, 83, 87                        |
| <i>quadricostatus</i> .....                       | 255                                | <i>wortheni</i> .....                          | 83                                |
| <i>quinquenarius</i> .....                        | 266                                | <i>Periploma claibornensis</i> .....           | 220                               |
| <i>rigbyi</i> .....                               | 241                                | <i>Periplomya</i> .....                        | 269, 271                          |
| <i>rigida</i> .....                               | 13, 47                             | <i>elliptica</i> .....                         | 269                               |
| <i>squamuliferus</i> (?) .....                    | 266                                | <i>truncata</i> .....                          | 271                               |
| ( <i>Syncyclonema</i> ?) <i>perlammollosus</i> .. | 266                                | <i>Perischaechinidae</i> .....                 | 42, 43, 44, 60                    |
| <i>tenuicollis</i> .....                          | 224, 226                           | <i>Perisoptera</i> .....                       | 102                               |
| <i>tenuilineatus</i> .....                        | 24                                 | <i>Peronaea</i> .....                          | 100                               |
| <i>tenuiculus</i> .....                           | 224                                | <i>Peronamoderma</i> .....                     | 100                               |
| <i>tenuitestus</i> .....                          | 266                                | <i>Perna</i> .....                             | 29, 82, 217                       |
| <i>utahensis</i> .....                            | 22                                 | <i>montana</i> .....                           | 50, 217                           |
| <i>venustus</i> .....                             | 266                                | <i>torta</i> .....                             | 50                                |
| <i>Pectenidae</i> .....                           | 30, 260, 261, 271                  | <i>Pernopecten</i> .....                       | 50                                |
| <i>Pectinibranchiata</i> .....                    | 34, 102, 106, 132, 134, 135        | <i>shumardianus</i> ..                         | 50                                |
| <i>Pectinidae</i> .....                           | 32, 33, 97, 132, 133, 263          | <i>Perigonota</i> .....                        | 268                               |
| <i>Pectanculus</i> .....                          | 99, 217                            | <i>protexta</i> .....                          | 268                               |
| <i>ellipsalis</i> .....                           | 220                                | <i>Petalodus alleghaniensis</i> .....          | 20                                |
| <i>nitens</i> .....                               | 50, 206                            | <i>Petraster</i> .....                         | 26                                |
| <i>patulus</i> .....                              | 206                                | <i>wilberanus</i> .....                        | 26                                |
| <i>siouxensis</i> .....                           | 13                                 | <i>Petricola</i> .....                         | 211, 213, 271                     |
| <i>subimbricatus</i> .....                        | 18                                 | <i>nova aegyptica</i> .....                    | 271                               |
| <i>Pectanculina parvula</i> .....                 | 15                                 | <i>pedroana</i> .....                          | 211, 213                          |
| <i>Palagus vanuxemi</i> .....                     | 222                                | <i>Petricolidae</i> .....                      | 271                               |
| <i>Penitella</i> .....                            | 212, 214                           | <i>Petrospongia</i> .....                      | 43                                |
| <i>spelaea</i> .....                              | 214                                | <i>Phacops</i> .....                           | 59, 195                           |
| <i>spelaeum</i> .....                             | 212                                | <i>anchiops</i> .....                          | 232                               |
| <i>Pennularia nobilis</i> .....                   | 203                                | <i>callicephalus</i> .....                     | 232                               |
| <i>varidis</i> .....                              | 203                                | <i>rana</i> .....                              | 59, 195                           |
| <i>Pentacrinidae</i> .....                        | 33, 133, 262                       | <i>Phacopsidae</i> .....                       | 109                               |
| <i>Pentacrinites</i> .....                        | 33, 94, 262                        | <i>Pharella</i> .....                          | 101, 156                          |
| <i>asteriscus</i> .....                           | 236, 262                           | <i>dakotensis</i> .....                        | 101                               |
| <i>Pentacrinus</i> .....                          | 133                                | <i>! pealei</i> .....                          | 76, 158                           |
| <i>astericus</i> .....                            | 18                                 | <i>Phasianella haleana</i> .....               | 48                                |
| <i>asteriscus</i> .....                           | 33, 133                            | <i>perovata</i> .....                          | 48                                |
| <i>Pentadia</i> .....                             | 223, 226                           | <i>punctata</i> .....                          | 48                                |
| <i>corona</i> .....                               | 226                                | <i>Phenopora multipora</i> .....               | 231                               |
| <i>reniformis</i> .....                           | 223                                | <i>Phillipsia</i> .....                        | 39, 74, 84, 87, 90, 149, 179, 196 |
| <i>spatangus</i> .....                            | 223                                | <i>— !</i> .....                               | 74, 253                           |
| <i>trigonia</i> .....                             | 223                                | <i>bufo</i> .....                              | 149                               |
| <i>Pentamerus</i> .....                           | 58, 62, 116, 193                   | <i>coronata</i> .....                          | 196                               |
| <i>borealis</i> .....                             | 62                                 | ( <i>Griffithides</i> ) <i>bufo</i> .....      | 65, 84                            |
| <i>comis</i> .....                                | 58, 193                            | <i>lodiensis</i> .....                         | 90                                |
| <i>huspodus</i> .....                             | 247                                | <i>portlockii</i> .....                        | 39, 84                            |
| <i>lenticularis</i> .....                         | 116                                | <i>sangamonensis</i> ..                        | 39, 87, 179                       |
| <i>lotis</i> .....                                | 193                                | <i>scitula</i> .....                           | 39, 87, 179                       |
| <i>oblongus</i> .....                             | 247                                | <i>major</i> .....                             | 74                                |
| <i>subglobosus</i> .....                          | 58                                 | <i>perannulata</i> .....                       | 256, 257                          |
| <i>Pentinidae</i> .....                           | 133                                | <i>scitula</i> .....                           | 74                                |
| <i>Pentremites</i> .....                          | 26, 54, 83, 91, 118, 149, 249, 251 | <i>stevensoni</i> .....                        | 69                                |
| <i>burlingtonensis</i> .....                      | 64, 83                             | <i>tuberculata</i> .....                       | 65                                |
| <i>conoidens</i> .....                            | 149                                | <i>Philocrinus</i> .....                       | 36                                |
| <i>cornutus</i> .....                             | 26                                 | <i>nebrascensis</i> .....                      | 36                                |
| <i>florialis</i> .....                            | 255                                | <i>pelvis</i> .....                            | 36                                |
| <i>godoni</i> .....                               | 149                                | <i>Pholadidae</i> .....                        | 101, 270, 272                     |
| ( <i>Granatocrinus</i> ) <i>granulosus</i> ..     | 38                                 | <i>Pholadomya</i> .....                        | 29, 34, 35, 92, 100, 164, 205,    |
| <i>laterniformis</i> .....                        | 249, 251                           | 207, 209, 218, 269                             |                                   |
| <i>melo</i> .....                                 | 249, 251                           | ( <i>Cymella</i> ) <i>undata</i> .....         | 48                                |
| <i>var. projectus</i> .....                       | 26                                 | <i>decisa</i> .....                            | 207                               |

|                                                             | Page.                             |                                                  | Page.                                                             |
|-------------------------------------------------------------|-----------------------------------|--------------------------------------------------|-------------------------------------------------------------------|
| <i>Pholadomya</i> ( <i>Goniomya</i> ) <i>borealis</i> ..... | 17                                | ——? <i>secalina</i> .....                        | 107, 170                                                          |
| ( <i>Homomya</i> ) <i>sudax</i> .....                       | 225                               | <i>subelongata</i> .....                         | 16                                                                |
| <i>curvata</i> (?) .....                                    | 225                               | <i>Physanoides</i> .....                         | 110, 220                                                          |
| <i>glendonensis</i> .....                                   | 225                               | <i>Physella</i> .....                            | 167                                                               |
| <i>humilis</i> .....                                        | 21, 34                            | <i>Physetocrinus</i> .....                       | 81                                                                |
| <i>kingii</i> .....                                         | 164                               | <i>Physids</i> .....                             | 106, 107, 125, 129                                                |
| <i>marylandica</i> .....                                    | 205                               | <i>Physinae</i> .....                            | 34                                                                |
| <i>occidentalis</i> .....                                   | 269                               | <i>Physodon</i> .....                            | 107                                                               |
| <i>orbiculata</i> .....                                     | 35                                | <i>Picstochellus</i> .....                       | 49, 102, 150                                                      |
| <i>papyracea</i> .....                                      | 20, 100                           | <i>vicksburgensis</i> .....                      | 22                                                                |
| ( <i>Platyma</i> ) <i>undata</i> .....                      | 225                               | <i>Pileopsis tenella</i> .....                   | 236                                                               |
| ( <i>Procardia</i> ) <i>hodgii</i> .....                    | 100                               | <i>alta</i> .....                                | 236                                                               |
| <i>roemeri</i> .....                                        | 269                               | <i>Pinna</i> .....                               | 73, 111, 121, 127, 132, 134, 150, 175,<br>196, 245, 250, 267, 270 |
| <i>sancti-sabae</i> .....                                   | 220                               | <i>calamitoides</i> .....                        | 256                                                               |
| <i>subelongata</i> .....                                    | 17, 92                            | <i>consimilis</i> .....                          | 196                                                               |
| <i>subventricosa</i> .....                                  | 18, 100                           | <i>hinrichsiana</i> .....                        | 191                                                               |
| <i>syriaca</i> .....                                        | 269                               | <i>inexpectans</i> .....                         | 196                                                               |
| <i>texana</i> .....                                         | 218                               | <i>kingii</i> .....                              | 111                                                               |
| <i>undata</i> M. & H. ....                                  | 15, 48                            | <i>lakei</i> .....                               | 145, 150                                                          |
| <i>undata</i> Dana .....                                    | 223                               | <i>laqueata</i> .....                            | 25                                                                |
| <i>Pholadomyidae</i> .....                                  | 100                               | ? <i>lingula</i> .....                           | 245                                                               |
| <i>Pholas</i> .....                                         | 205, 270                          | <i>ludlovi</i> .....                             | 239                                                               |
| <i>cithara</i> .....                                        | 270                               | <i>peracuta</i> .....                            | 73, 132, 178                                                      |
| <i>cuneata</i> .....                                        | 18                                | <i>petrina</i> .....                             | 197, 134, 152                                                     |
| ? <i>lata</i> .....                                         | 270                               | <i>rostriformis</i> .....                        | 270                                                               |
| <i>petrosa</i> .....                                        | 205                               | <i>stevensoni</i> .....                          | 153                                                               |
| <i>Pholidocidaris</i> .....                                 | 83                                | <i>Pinnidae</i> .....                            | 111, 121, 122, 134, 267                                           |
| <i>irregularis</i> .....                                    | 83, 87                            | <i>Pinnularia affinis</i> .....                  | 229                                                               |
| <i>Pholidops</i> .....                                      | 79, 192                           | <i>amphioxys</i> .....                           | 229                                                               |
| <i>bellula</i> .....                                        | 192                               | <i>digitus</i> .....                             | 229                                                               |
| <i>cincinnatiensis</i> .....                                | 79                                | <i>gastrum</i> .....                             | 229                                                               |
| <i>quadrangularis</i> .....                                 | 192                               | <i>macilenta</i> .....                           | 229                                                               |
| <i>Phonemus</i> ( <i>Flabellina</i> ) <i>cuneatus</i> ..... | 47                                | <i>mesogongyla</i> .....                         | 229                                                               |
| <i>sagittarius</i> .....                                    | 47                                | <i>oregonica</i> .....                           | 229                                                               |
| <i>Phorus</i> .....                                         | 138, 208                          | <i>pachyptera</i> ? .....                        | 203, 229                                                          |
| <i>exoneratus</i> .....                                     | 138                               | <i>placentalis</i> .....                         | 229                                                               |
| <i>syriacus</i> .....                                       | 208                               | <i>viridis</i> .....                             | 229                                                               |
| <i>Phragmoceras</i> .....                                   | 39, 91, 248                       | <i>viridula</i> .....                            | 229                                                               |
| <i>ventricosum</i> ? .....                                  | 247                               | <i>Pirenella</i> .....                           | 106, 161                                                          |
| <i>walshii</i> .....                                        | 39, 91                            | <i>Pisces</i> .....                              | 224                                                               |
| <i>Phyllites</i> .....                                      | 246                               | <i>Pisidium</i> .....                            | 137                                                               |
| <i>coriaceus</i> .....                                      | 246                               | <i>sagittatum</i> .....                          | 137, 168                                                          |
| <i>venosissimus</i> .....                                   | 246                               | <i>Pitar</i> .....                               | 100                                                               |
| <i>Phylloceras</i> .....                                    | 93, 104                           | <i>Placenticeras</i> .....                       | 93, 104                                                           |
| ? <i>halli</i> .....                                        | 104                               | <i>placenta</i> .....                            | 104                                                               |
| ? <i>ramosus</i> .....                                      | 93                                | <i>var. intercalare</i> .....                    | 104                                                               |
| <i>Phylloda</i> .....                                       | 100                               | ( <i>Sphenodiscus</i> ) <i>lenticulare</i> ..... | 104                                                               |
| <i>Phyllograptus</i> .....                                  | 120, 129                          | <i>vancouverense</i> .....                       | 98                                                                |
| <i>loringi</i> .....                                        | 120, 129                          | <i>Placunopsis</i> .....                         | 86, 90, 142                                                       |
| <i>Phyllopora</i> .....                                     | 61                                | <i>carbonaria</i> .....                          | 41, 86, 87                                                        |
| <i>Phyllothea australis</i> .....                           | 227                               | <i>hilliardensis</i> .....                       | 149                                                               |
| <i>Phylloteuthis</i> .....                                  | 21, 105                           | <i>recticardinalis</i> .....                     | 90                                                                |
| <i>subovata</i> .....                                       | 105                               | <i>Plagiaria</i> .....                           | 96                                                                |
| <i>subovatus</i> .....                                      | 21                                | <i>Plagiostoma dumosa</i> .....                  | 222                                                               |
| <i>Phya</i> .....                                           | 107, 135, 137, 141, 143, 161, 197 | <i>echinatum</i> .....                           | 47                                                                |
| ——? .....                                                   | 143, 161, 167, 168                | <i>pelagicum</i> .....                           | 47                                                                |
| <i>bridgerensis</i> .....                                   | 77, 135, 159, 170                 | <i>Planaria nitens</i> .....                     | 221                                                               |
| <i>carletoni</i> .....                                      | 77, 143, 167                      | <i>Planella</i> .....                            | 35                                                                |
| <i>cappi</i> .....                                          | 139, 161, 169                     | <i>Planorbella</i> .....                         | 24, 106                                                           |
| <i>falls</i> .....                                          | 141, 161, 169                     | <i>Planorbinae</i> .....                         | 34                                                                |
| <i>kanabensis</i> .....                                     | 137                               | <i>Planorbis</i> .....                           | 34, 96, 106, 107, 112, 125, 137, 153,<br>150, 161                 |
| <i>longicauda</i> .....                                     | 16                                | ——? .....                                        | 125                                                               |
| <i>patersoniana</i> .....                                   | 16                                | <i>equalis</i> .....                             | 153, 170                                                          |
| <i>pleymattii</i> .....                                     | 135, 170                          | <i>simplexus</i> .....                           | 17                                                                |
| <i>princeps</i> .....                                       | 180, 197                          |                                                  |                                                                   |
| <i>promutabilis</i> .....                                   | 16                                |                                                  |                                                                   |

|                                                                         | Page. |
|-------------------------------------------------------------------------|-------|
| <i>anorbis</i> ( <i>Bathymphalus</i> ) <i>amplexus</i> .. 106, 161, 169 |       |
| <i>kanabensis</i> .. 137, 169                                           |       |
| <i>plano-convexus</i> .. 106,                                           |       |
| 161, 169                                                                |       |
| <i>cirratus</i> .. 159, 170                                             |       |
| <i>convolutus</i> .. 16, 106, 161, 169                                  |       |
| <i>var.</i> .. 106                                                      |       |
| <i>fragilis</i> .. 17                                                   |       |
| ( <i>Gyraulus</i> ) <i>militaris</i> .. 153, 170                        |       |
| <i>leidy</i> .. 91, 107, 170                                            |       |
| <i>lunata</i> .. 170                                                    |       |
| ( <i>Menetus</i> ) <i>nebrascensis</i> .. 107                           |       |
| <i>vetustus</i> .. 107                                                  |       |
| <i>nebrascensis</i> .. 170                                              |       |
| <i>spectabilis</i> .. 99, 95, 112                                       |       |
| <i>var. utahensis</i> .. 95, 112                                        |       |
| <i>subumbilicatus</i> .. 16                                             |       |
| <i>tenuivolvis</i> .. 17                                                |       |
| <i>utahensis</i> .. 99, 135, 170                                        |       |
| <i>var. spectabilis</i> .. 170                                          |       |
| <i>veterinus</i> .. 24, 167                                             |       |
| <i>vetulus</i> .. 91                                                    |       |
| <i>vetustus</i> .. 170                                                  |       |
| <i>antae</i> .. 128, 250, 261                                           |       |
| <i>anularia cuneata</i> .. 47                                           |       |
| <i>styoceas</i> .. 40, 57, 59, 60, 74, 80, 84, 86, 90, 117,             |       |
| 132, 149, 165, 178, 186, 194, 197                                       |       |
| <i>attenuatum</i> .. 67                                                 |       |
| <i>biseriatis</i> .. 60                                                 |       |
| <i>bivalve</i> .. 117                                                   |       |
| <i>conradi</i> .. 194                                                   |       |
| <i>dumosum var. attenuatum</i> .. 80                                    |       |
| <i>equilatera</i> .. 84, 149                                            |       |
| <i>flavirella</i> .. 84                                                 |       |
| <i>halitoides</i> .. 40, 59                                             |       |
| <i>infundibulum</i> .. 84                                               |       |
| <i>laevigatum</i> .. 40                                                 |       |
| <i>minutissimum</i> .. 196                                              |       |
| <i>multispinosum</i> .. 67, 80                                          |       |
| <i>nebrascense</i> .. 132, 179                                          |       |
| <i>nebrascensis</i> .. 74                                               |       |
| <i>nodosum</i> .. 194                                                   |       |
| <i>occidens</i> .. 197                                                  |       |
| ( <i>Orthonychia</i> ) <i>chesterense</i> .. 40                         |       |
| <i>infundibulum</i> .. 40                                               |       |
| <i>lodiense</i> .. 67, 80                                               |       |
| <i>pyramidatum</i> .. 57                                                |       |
| <i>quincyense</i> .. 60                                                 |       |
| <i>subplicatum</i> .. 40, 59                                            |       |
| <i>paralium</i> .. 117                                                  |       |
| <i>piso</i> .. 197                                                      |       |
| (?) <i>reversum</i> .. 60                                               |       |
| <i>spinigerum</i> .. 86                                                 |       |
| <i>spirale</i> .. 57                                                    |       |
| <i>subundatum</i> .. 57                                                 |       |
| <i>thetiforme</i> .. 194                                                |       |
| <i>tortum</i> .. 67, 90                                                 |       |
| <i>tribulosum</i> .. 165                                                |       |
| <i>uncum</i> .. 40, 84                                                  |       |
| <i>undulatum</i> .. 194                                                 |       |
| <i>ventricosum</i> .. 59                                                |       |
| <i>tychisma depressum</i> .. 226                                        |       |
| <i>oculus</i> .. 226                                                    |       |
| <i>rotundatum</i> .. 226                                                |       |
| <i>tyocrinites</i> .. 82, 83, 85                                        |       |

|                                                                       | Page. |
|-----------------------------------------------------------------------|-------|
| <i>Platycrinites equalis</i> .. 82                                    |       |
| <i>burlingtonensis</i> .. 82                                          |       |
| ( <i>Eucladocrinus</i> ) <i>montanensis</i> .. 71                     |       |
| <i>halli</i> .. 82                                                    |       |
| <i>hemisphaericus</i> .. 83                                           |       |
| <i>incomptus</i> .. 83                                                |       |
| <i>planus</i> .. 82                                                   |       |
| <i>parvulus</i> .. 85                                                 |       |
| <i>subspinosus</i> .. 82                                              |       |
| <i>tenuibranchiatus</i> .. 82                                         |       |
| <i>Platycrinus</i> .. 23, 26, 38, 42, 43, 59, 60, 117, 118, 127, 130, |       |
| 144, 154, 163, 165, 248, 249, 250, 251                                |       |
| <i>—?</i> .. 127, 130                                                 |       |
| <i>americanus</i> .. 249, 251                                         |       |
| <i>bonoensis</i> .. 144, 165                                          |       |
| <i>burlingtonensis</i> .. 249, 251                                    |       |
| <i>corrugatus</i> .. 249, 251                                         |       |
| <i>discoideus</i> .. 249, 251                                         |       |
| <i>haydeni</i> .. 163                                                 |       |
| <i>hemisphaericus</i> .. 38, 60, 154                                  |       |
| <i>incomptus</i> .. 117                                               |       |
| <i>multibranchiatus</i> .. 96                                         |       |
| <i>niotensis</i> .. 38, 60                                            |       |
| <i>oweni</i> .. 96                                                    |       |
| <i>parvulus</i> .. 38                                                 |       |
| <i>penicillus</i> .. 23, 44                                           |       |
| <i>planus</i> .. 44, 59, 249, 251                                     |       |
| <i>plenus</i> .. 23                                                   |       |
| ( <i>Pleurocrinus</i> ) <i>asper</i> .. 26, 59                        |       |
| <i>subspinosus</i> .. 42                                              |       |
| <i>pleurovimenensis</i> .. 118                                        |       |
| <i>prattenanus</i> .. 23, 43                                          |       |
| <i>quinenodus</i> .. 118                                              |       |
| <i>scobina</i> .. 26, 59                                              |       |
| <i>verrucosus</i> .. 117                                              |       |
| <i>yandellii</i> .. 249, 251                                          |       |
| <i>Platyostoma</i> .. 25, 80, 148, 194, 197                           |       |
| <i>inornatum</i> .. 197                                               |       |
| <i>lineatum</i> .. 194                                                |       |
| <i>nana</i> .. 25, 27                                                 |       |
| <i>niagarens</i> .. 148                                               |       |
| <i>var. trigonostoma</i> .. 80                                        |       |
| ? <i>trigonostoma</i> .. 67                                           |       |
| ? <i>tumida</i> .. 25                                                 |       |
| <i>Platyochisma</i> .. 195                                            |       |
| ? <i>ambiguum</i> .. 195                                              |       |
| ? <i>depressum</i> .. 223                                             |       |
| ? <i>mccoyi</i> .. 195                                                |       |
| <i>pellicoides</i> .. 40                                              |       |
| <i>Platytrachus goldfussii</i> .. 220                                 |       |
| <i>stokesii</i> .. 220                                                |       |
| <i>Plectocolen</i> ? <i>diegoensis</i> .. 220                         |       |
| <i>parallelus</i> .. 220                                              |       |
| <i>Plethomytilus</i> .. 194                                           |       |
| <i>Pleurocrinus</i> .. 38, 42                                         |       |
| <i>Pleurodictyum</i> .. 57                                            |       |
| <i>problematicum</i> .. 57                                            |       |
| <i>Pleurolimnæa</i> .. 106, 161                                       |       |
| <i>Pleuromya</i> .. 260, 262                                          |       |
| <i>newtoni</i> .. 260, 262                                            |       |
| <i>Pleurophorus</i> .. 32, 33, 38, 45, 61, 73, 86, 90, 161, 197, 258  |       |
| <i>—?</i> .. 92                                                       |       |
| ? <i>angulatus</i> .. 38, 92                                          |       |
| <i>calhouni</i> .. 33                                                 |       |
| ? ( <i>cardinia</i> ) <i>subcuneata</i> .. 19                         |       |

|                                          | Page.                                                                                                       |                                                | Page.                                                                    |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------|
| <i>Pleurophorus costatiformis</i> .....  | 38, 61                                                                                                      | <i>Pleurotomaria pratteni</i> .....            | 25, 6                                                                    |
| <i>oblongus</i> .....                    | 73, 86                                                                                                      | <i>proutiana</i> .....                         | 256                                                                      |
| <i>occidentalis</i> .....                | 19, 32, 73, 258                                                                                             | ( <i>Soalites</i> ?) <i>tropidophora</i> ..... | 70, 79                                                                   |
| <i>meeki</i> .....                       | 197                                                                                                         | <i>scitula</i> .....                           | 25, 4                                                                    |
| <i>subcostatus</i> .....                 | 38, 45, 151                                                                                                 | <i>shumardi</i> .....                          | 25, 4                                                                    |
| ? <i>subcuneatus</i> .....               | 20                                                                                                          | <i>speciosa</i> .....                          | 25, 45                                                                   |
| <i>subcuneatus</i> .....                 | 33, 51                                                                                                      | <i>spherulata</i> .....                        | 179                                                                      |
| <i>tropidophorus</i> .....               | 90                                                                                                          | <i>spironema</i> .....                         | 40, 5                                                                    |
| <i>Pleurotoma</i> .....                  | 212, 214, 237                                                                                               | <i>subacalaris</i> .....                       | 25, 46                                                                   |
| <i>beaumontii</i> .....                  | 222                                                                                                         | <i>subconstricta</i> .....                     | 24, 45                                                                   |
| <i>celata</i> .....                      | 222                                                                                                         | <i>subdeussata</i> .....                       | 74                                                                       |
| <i>childreni</i> .....                   | 222                                                                                                         | <i>subturbinata</i> .....                      | 19, 20, 3                                                                |
| <i>deemoyersii</i> .....                 | 222                                                                                                         | <i>subsinuata</i> .....                        | 25, 46                                                                   |
| <i>kellogii</i> .....                    | 222                                                                                                         | <i>straeleckiana</i> .....                     | 228                                                                      |
| <i>lonsdalli</i> .....                   | 222                                                                                                         | <i>tabulata</i> .....                          | 143, 179                                                                 |
| <i>minor</i> .....                       | 256                                                                                                         | <i>taggarti</i> .....                          | 88, 164                                                                  |
| <i>monilifera</i> .....                  | 222                                                                                                         | <i>tenuicincta</i> .....                       | 24, 45                                                                   |
| <i>nodocarinata</i> .....                | 222                                                                                                         | <i>texana</i> .....                            | 49                                                                       |
| <i>obliqua</i> .....                     | 222                                                                                                         | <i>textiligera</i> .....                       | 67, 89                                                                   |
| <i>ocoyana</i> .....                     | 212                                                                                                         | <i>triflata</i> .....                          | 223, 224                                                                 |
| <i>pagoda</i> .....                      | 237                                                                                                         | <i>tumida</i> .....                            | 46                                                                       |
| <i>platysoma</i> .....                   | 237                                                                                                         | <i>turbiniformis</i> .....                     | 25, 45, 179                                                              |
| <i>sayi</i> .....                        | 222                                                                                                         | <i>uniangulata</i> .....                       | 231                                                                      |
| <i>texana</i> .....                      | 222                                                                                                         | <i>valvatiformis</i> .....                     | 40, 67                                                                   |
| <i>transmontana</i> .....                | 212, 214                                                                                                    | <i>Pleurotomaridæ</i> .....                    | 21, 39, 63, 103                                                          |
| <i>varicostata</i> .....                 | 222                                                                                                         | <i>Plicatula</i> .....                         | 93, 136, 142, 218, 266                                                   |
| <i>venusta</i> .....                     | 237                                                                                                         | <i>arenaria</i> .....                          | 93                                                                       |
| <i>Pleurotomaria</i> .....               | 24, 32, 39, 43, 44, 45, 56, 63, 74,<br>79, 81, 89, 117, 147, 149, 151,<br>164, 165, 179, 191, 197, 248, 258 | <i>hydrotheca</i> .....                        | 136, 142                                                                 |
| — ?.....                                 | 63, 248                                                                                                     | <i>incongrua</i> .....                         | 219                                                                      |
| <i>angulata</i> f.....                   | 248                                                                                                         | <i>striato-costata</i> .....                   | 52                                                                       |
| <i>broadheadi</i> .....                  | 165                                                                                                         | <i>urticosa</i> .....                          | 266                                                                      |
| <i>brasoensis</i> .....                  | 45                                                                                                          | <i>Plumulites</i> .....                        | 191                                                                      |
| <i>caali</i> .....                       | 56                                                                                                          | <i>Podosphenia pupula</i> .....                | 229                                                                      |
| <i>chesterensis</i> .....                | 25, 44                                                                                                      | <i>Podophthalma</i> .....                      | 32, 123, 123                                                             |
| <i>conoides</i> .....                    | 40, 87                                                                                                      | <i>Podoxamites crassifolia</i> .....           | 9-16                                                                     |
| <i>cornula</i> .....                     | 239                                                                                                         | <i>Pocilopoda</i> .....                        | 189, 191, 195, 196                                                       |
| <i>coxana</i> .....                      | 40, 87                                                                                                      | <i>Polycellia</i> .....                        | 275                                                                      |
| <i>cyclonemoides</i> .....               | 56                                                                                                          | <i>Polynema</i> .....                          | 96                                                                       |
| <i>excolesa</i> .....                    | 246                                                                                                         | <i>Polyphemopsis</i> .....                     | 27, 48, 86, 149, 155, 179                                                |
| <i>granulostriata</i> .....              | 24, 45                                                                                                      | — (?).....                                     | 179                                                                      |
| <i>grayvillensis</i> .....               | 74, 147, 164                                                                                                | <i>chrysallia</i> .....                        | 40, 86                                                                   |
| <i>gurleyi</i> .....                     | 67, 87                                                                                                      | <i>fusiformis</i> .....                        | 140                                                                      |
| <i>halliana</i> .....                    | 258                                                                                                         | <i>inornata</i> .....                          | 46                                                                       |
| <i>haydeniana</i> .....                  | 74                                                                                                          | <i>nitidula</i> .....                          | 46, 155, 179                                                             |
| <i>humerosa</i> .....                    | 19, 20, 32                                                                                                  | <i>peracuta</i> .....                          | 46, 179                                                                  |
| <i>inornata</i> .....                    | 74                                                                                                          | <i>Polypi</i> .....                            | 71, 96, 106, 109, 121, 126, 148, 149, 177                                |
| <i>lucina</i> .....                      | 81                                                                                                          | <i>Polypora</i> .....                          | 72, 127, 131                                                             |
| <i>lenticularis</i> .....                | 248                                                                                                         | <i>biarmica</i> .....                          | 52                                                                       |
| <i>lucensis</i> .....                    | 191                                                                                                         | <i>marginata</i> .....                         | 52                                                                       |
| <i>marcouliana</i> .....                 | 74                                                                                                          | <i>mexicana</i> .....                          | 274                                                                      |
| <i>mississippiensis</i> .....            | 117                                                                                                         | <i>stragula</i> .....                          | 127, 131                                                                 |
| <i>morrisoniana</i> .....                | 224, 226                                                                                                    | <i>submarginata</i> .....                      | 79                                                                       |
| <i>mullicollensis</i> .....              | 49                                                                                                          | <i>Polyrhytes</i> .....                        | 106                                                                      |
| ( <i>Murchisonia</i> ) <i>meta</i> ..... | 39                                                                                                          | <i>Polyzoa</i> .....                           | 38, 60, 68, 72, 78, 80, 88, 90, 94, 127, 131,<br>144, 147, 151, 163, 178 |
| <i>murina</i> .....                      | 250                                                                                                         | <i>Porambonites</i> .....                      | 234                                                                      |
| <i>nevadensis</i> .....                  | 197                                                                                                         | <i>obscurus</i> .....                          | 234                                                                      |
| <i>newportensis</i> .....                | 165                                                                                                         | <i>Porocellia</i> .....                        | 50, 117, 118                                                             |
| <i>nodomarginata</i> .....               | 197                                                                                                         | <i>crassinoda</i> .....                        | 117                                                                      |
| <i>orda</i> .....                        | 223, 226                                                                                                    | <i>nodosa</i> .....                            | 50                                                                       |
| <i>obtusileptra</i> .....                | 258                                                                                                         | <i>obliquinoda</i> .....                       | 118                                                                      |
| <i>pectinimera</i> .....                 | 74                                                                                                          | <i>Porifera</i> .....                          | 154, 180, 192                                                            |
| <i>pericomaia</i> .....                  | 151                                                                                                         | <i>Porites astriformis</i> .....               | 247                                                                      |
| <i>peruviana</i> .....                   | 258                                                                                                         | <i>Porocrinus</i> .....                        | 27, 55                                                                   |
|                                          |                                                                                                             | <i>crassus</i> .....                           | 37, 55                                                                   |



|                                             | Page.                                                  |
|---------------------------------------------|--------------------------------------------------------|
| <i>roerinus pentagonius</i> .....           | 37, 55                                                 |
| <i>rilandia</i> .....                       | 98                                                     |
| <i>stilonomya</i> .....                     | 90, 110, 194                                           |
| <i>devonica</i> .....                       | 194                                                    |
| <i>fracta</i> .....                         | 90                                                     |
| <i>fragosa</i> .....                        | 110                                                    |
| <i>laevis</i> .....                         | 194                                                    |
| <i>humida</i> .....                         | 105                                                    |
| <i>teriocrinites</i> .....                  | 77, 82, 83, 84, 85                                     |
| <i>biselli</i> .....                        | 84                                                     |
| ( <i>Dendrocrinus</i> ) <i>caducens</i> ..  | 77                                                     |
| <i>dyeri</i> .....                          | 68, 77                                                 |
| <i>caesi</i> .....                          | 77                                                     |
| <i>cincinnatiensis</i> .....                | 68, 77                                                 |
| <i>polydactylus</i> .....                   | 68, 77                                                 |
| <i>posticus</i> .....                       | 77                                                     |
| <i>hardinensis</i> .....                    | 84                                                     |
| <i>macoupinensis</i> .....                  | 85                                                     |
| <i>perplexus</i> .....                      | 82                                                     |
| ( <i>Scaphiocrinus</i> ) <i>sequalis</i> .. | 83                                                     |
| <i>bayensis</i> .....                       | 84                                                     |
| <i>carbonarius</i> .....                    | 85                                                     |
| <i>coreyi</i> .....                         | 83                                                     |
| <i>depressus</i> .....                      | 83                                                     |
| <i>hemisphericus</i> .....                  | 85                                                     |
| <i>huntsvillae</i> .....                    | 84                                                     |
| <i>macadamiae</i> .....                     | 83                                                     |
| <i>randolphensis</i> .....                  | 84                                                     |
| <i>unions</i> .....                         | 83                                                     |
| ( <i>Zeacrinus</i> ) <i>arboreus</i> .....  | 84                                                     |
| <i>armiger</i> .....                        | 84                                                     |
| <i>cariniferous</i> .....                   | 84                                                     |
| <i>compactilis</i> .....                    | 89                                                     |
| <i>compactilus</i> .....                    | 84                                                     |
| <i>concinus</i> .....                       | 64, 68                                                 |
| <i>formosus</i> .....                       | 84                                                     |
| [ <i>Hydrelonocrinus</i> ] .....            |                                                        |
| <i>acanthoporus</i> .....                   | 85                                                     |
| <i>mucrospinus</i> .....                    | 85                                                     |
| <i>subtumidus</i> .....                     | 84                                                     |
| <i>erlocrinus</i> .....                     | 23, 26, 37, 38, 42, 43, 60, 85, 91, 118, 163, 249, 251 |
| <i>bursaeformis</i> .....                   | 118                                                    |
| <i>carinatus</i> .....                      | 96, 60                                                 |
| <i>depressus</i> .....                      | 85                                                     |
| <i>enormis</i> .....                        | 96                                                     |
| <i>hemisphericus</i> .....                  | 52                                                     |
| <i>indianensis</i> .....                    | 38, 60                                                 |
| <i>montanaensis</i> .....                   | 163                                                    |
| <i>obuncus</i> .....                        | 118                                                    |
| <i>occidentalis</i> .....                   | 949, 251                                               |
| <i>rhombiferus</i> .....                    | 949, 251                                               |
| <i>salignoides</i> .....                    | 118                                                    |
| ( <i>Scaphiocrinus</i> ) <i>bayensis</i> .. | 38                                                     |
| <i>carbonarius</i> .....                    | 96                                                     |
| <i>decaedactylus</i> .....                  | 93, 43                                                 |
| <i>norwoodi</i> .....                       | 38                                                     |
| <i>solidus</i> .....                        | 96                                                     |
| <i>subtumidus</i> .....                     | 38                                                     |
| <i>tenuidactylus</i> .....                  | 38, 60                                                 |

|                                                                   | Page.                                                                                                                    |
|-------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <i>Poteriocrinus</i> ( <i>Scaphiocrinus</i> ) <i>unicus</i> ..... | 91                                                                                                                       |
| <i>wachsmuthi</i> .....                                           | 96                                                                                                                       |
| <i>spinosus</i> .....                                             | 949, 251                                                                                                                 |
| <i>subimpressus</i> .....                                         | 96, 60                                                                                                                   |
| <i>swallowi</i> .....                                             | 93, 42                                                                                                                   |
| <i>tenuibrachiatatus</i> .....                                    | 96, 60                                                                                                                   |
| <i>tumidus</i> .....                                              | 949, 251                                                                                                                 |
| ( <i>Zeacrinus</i> ) <i>carbonarius</i> .....                     | 37                                                                                                                       |
| <i>Priscoficus hornii</i> .....                                   | 221                                                                                                                      |
| <i>Prionocycylus</i> .....                                        | 94, 104, 150, 265                                                                                                        |
| <i>macombi</i> .....                                              | 94                                                                                                                       |
| ( <i>Prionotropis</i> ) <i>woolgari</i> .....                     | 104                                                                                                                      |
| <i>wyomingensis</i> .....                                         | 150, 265                                                                                                                 |
| <i>Prionotropis</i> .....                                         | 104                                                                                                                      |
| <i>Procardia</i> .....                                            | 100                                                                                                                      |
| <i>Productella</i> .....                                          | 193                                                                                                                      |
| <i>Productidae</i> .....                                          | 31, 62, 108, 109, 121                                                                                                    |
| <i>Productus</i> ..                                               | 24, 26, 30, 44, 45, 58, 61, 62, 72, 85, 89, 92, 94, 108, 109, 119, 130, 131, 149, 156, 163, 177, 193, 196, 233, 235, 257 |
| <i>!</i> .....                                                    | 62, 89, 109, 233                                                                                                         |
| <i>aequicostatus</i> .....                                        | 253, 274                                                                                                                 |
| <i>brachythærus</i> .....                                         | 225                                                                                                                      |
| <i>calhounianus</i> .....                                         | 20, 245, 257                                                                                                             |
| <i>canorini</i> .....                                             | 52                                                                                                                       |
| <i>cora</i> .....                                                 | 177, 243, 255                                                                                                            |
| <i>var. mogayoni</i> .....                                        | 243                                                                                                                      |
| <i>costatoides</i> .....                                          | 245                                                                                                                      |
| <i>costatus</i> ..                                                | 72, 109, 131, 149, 177, 243, 245, 255                                                                                    |
| <i>!</i> .....                                                    | 233                                                                                                                      |
| <i>delawarii</i> .....                                            | 943                                                                                                                      |
| <i>disemillia</i> .....                                           | 62                                                                                                                       |
| <i>elegans</i> .....                                              | 235                                                                                                                      |
| <i>exanthematus</i> .....                                         | 58                                                                                                                       |
| <i>flemingii</i> .....                                            | 52, 243                                                                                                                  |
| <i>var. burlingtonensis</i> ..                                    | 235                                                                                                                      |
| <i>fragilis</i> .....                                             | 923, 225                                                                                                                 |
| <i>giganteus</i> .....                                            | 163                                                                                                                      |
| <i>hirsutiforme</i> .....                                         | 193                                                                                                                      |
| <i>horreocens</i> .....                                           | 52                                                                                                                       |
| <i>horridus</i> .....                                             | 52                                                                                                                       |
| <i>ivesi</i> .....                                                | 945                                                                                                                      |
| <i>koninckianus</i> .....                                         | 52                                                                                                                       |
| <i>laevicostatus</i> ? .....                                      | 235                                                                                                                      |
| <i>laevicostus</i> .....                                          | 116                                                                                                                      |
| <i>lasallensis</i> .....                                          | 85                                                                                                                       |
| <i>latissimus</i> .....                                           | 92                                                                                                                       |
| <i>leplayi</i> ? .....                                            | 257                                                                                                                      |
| <i>longispinus</i> .....                                          | 52, 72, 85, 109, 131, 177                                                                                                |
| <i>magnus</i> .....                                               | 96, 61                                                                                                                   |
| <i>mexicanus</i> ..                                               | 131, 956, 257                                                                                                            |
| <i>multistriatus</i> .....                                        | 92, 94, 109                                                                                                              |
| <i>muricatus</i> .....                                            | 131                                                                                                                      |
| <i>nanus</i> .....                                                | 94, 45                                                                                                                   |
| <i>nebrascensis</i> ..                                            | 52, 72, 85, 131, 177, 950, 274                                                                                           |
| <i>nevadensis</i> .....                                           | 109                                                                                                                      |
| <i>nodosus</i> .....                                              | 945, 246                                                                                                                 |
| <i>norwoodi</i> .....                                             | 20, 257                                                                                                                  |
| <i>occidentalis</i> .....                                         | 945                                                                                                                      |
| <i>orbiniannus</i> .....                                          | 52                                                                                                                       |
| <i>parvus</i> .....                                               | 94, 44, 130                                                                                                              |
| <i>pertenuis</i> .....                                            | 72                                                                                                                       |
| <i>pilleolus</i> .....                                            | 956, 257                                                                                                                 |
| <i>popel</i> .....                                                | 956, 257                                                                                                                 |

|                                                | Page.                              |                                                 | Page.                                          |
|------------------------------------------------|------------------------------------|-------------------------------------------------|------------------------------------------------|
| <i>Productus prattenianus</i> .....            | 20, 52, 72, 109, 131               | <i>Protozoa</i> .....                           | 31, 41, 43, 55, 56, 58, 71, 120, 121, 131, 177 |
| ( <i>Productella</i> ) <i>hallanus</i> .....   | <b>193</b>                         | <i>Psammobia</i> .....                          | <b>260, 262</b>                                |
| <i>lachrymosus</i> var. ....                   |                                    | <i>f cancellato-sculpta</i> .....               | 48                                             |
| <i>limus</i> .....                             | 193                                | <i>f prematura</i> .....                        | <b>260, 262</b>                                |
| <i>lachrymosus</i> var. ....                   |                                    | <i>Psammobiidae</i> .....                       | <b>260, 262</b>                                |
| <i>stigmatus</i> .....                         | 103                                | <i>Pseudobuccinum</i> .....                     | 18, 103                                        |
| <i>lachrymosus navi-</i>                       |                                    | <i>nebrascensis</i> .....                       | 18, 103                                        |
| <i>cella</i> .....                             | 193                                | <i>Pseudoliva sulcata</i> .....                 | 22                                             |
| <i>speciosus</i> .....                         | 193                                | <i>Pseudomonotis</i> .....                      | 73, 262                                        |
| <i>subaculeatus</i> .....                      | 193                                | ( <i>Eumicrotis</i> ) <i>curta</i> .....        | 262                                            |
| <i>shumardianus</i> .....                      | 193                                | <i>orbiculata</i> .....                         | <b>260, 262</b>                                |
| <i>truncatus</i> .....                         | 193                                | <i>hawai</i> .....                              | 51                                             |
| <i>punctatus</i> .....                         | 72, 85, 131, 155, 177, 243, 255    | <i>radialis</i> .....                           | 73                                             |
| <i>pustulosus</i> (!) .....                    | 20, 242                            | <i>sinnata</i> .....                            | 51                                             |
| <i>pyxidiformis</i> .....                      | 243                                | <i>Pseudonantulus</i> .....                     | 104                                            |
| <i>rogersi</i> .....                           | 20, 52, 233, 245                   | <i>Pseudoptera</i> .....                        | 97, 143                                        |
| <i>scabriculus</i> .....                       | 243, 245                           | <i>Psaphis tantilla</i> .....                   | 50                                             |
| <i>scitulus</i> .....                          | <b>24, 43</b>                      | <i>Pailomya</i> .....                           | 134                                            |
| <i>semireticulatus</i> .....                   | 30, 72, 109, 131, 177, 232,        | <i>Pteria</i> .....                             | 33, 97, 142, 151, 153, 156, 260, 263, 267      |
| 233, 235, 243, 245, 274                        |                                    | <i>abrupta</i> .....                            | 47                                             |
| var. <i>antiquatus</i> .....                   | 257                                | <i>convexo plano</i> .....                      | 47                                             |
| <i>semistriatus</i> .....                      | <b>29, 94, 109</b>                 | <i>cretacea</i> .....                           | 47                                             |
| <i>splendens</i> (!) .....                     | 20, 245, 253, 274                  | <i>haydeni</i> .....                            | 47, 97                                         |
| <i>subaculeatus</i> .....                      | 94, 108, 196                       | <i>iridescens</i> .....                         | 47                                             |
| <i>subhorridus</i> .....                       | <b>109</b>                         | <i>laripes</i> .....                            | 47, 267                                        |
| <i>symmetricus</i> .....                       | 72, 177                            | <i>linguiformis</i> .....                       | 47, 97, 263                                    |
| <i>villiersi</i> .....                         | 274                                | var. <i>subgibbosa</i> .....                    | 97                                             |
| <i>viminalis</i> .....                         | <b>119</b>                         | [?] <i>multangula</i> .....                     | 50                                             |
| <i>Pröetidae</i> .....                         | 109                                | <i>navicula</i> .....                           | <b>267</b>                                     |
| <i>Pröetus</i> .....                           | 39, 59, 79, 81, 109, 195, 232, 235 | <i>nebrascana</i> .....                         | 47                                             |
| <i>ellipticus</i> .....                        | <b>39, 59</b>                      | ( <i>Oxytoma</i> ) <i>erecta</i> .....          | <b>153, 157</b>                                |
| <i>haldemani</i> .....                         | 196                                | <i>f gastrolees</i> .....                       | 143                                            |
| <i>loganensis</i> .....                        | <b>235</b>                         | <i>mucronata</i> .....                          | 160                                            |
| <i>marginalis</i> .....                        | 196                                | <i>munsteri</i> .....                           | 33, 49                                         |
| <i>peroccidens</i> .....                       | <b>235</b>                         | <i>nebrascana</i> .....                         | 97, 263                                        |
| ( <i>Phæton</i> ) <i>denticulatus</i> .....    | <b>109</b>                         | <i>salinensis</i> .....                         | <b>151, 158</b>                                |
| <i>planimargitus</i> .....                     | <b>67</b>                          | <i>parkensis</i> .....                          | 142                                            |
| <i>planimarginatus</i> .....                   | 81                                 | <i>pedernalis</i> .....                         | 47                                             |
| <i>spurlocki</i> .....                         | <b>69, 79</b>                      | <i>petroea</i> .....                            | 47, 267                                        |
| <i>Promacrus</i> .....                         | 68, 89                             | <i>planisulca</i> .....                         | 47                                             |
| <i>andrewsi</i> .....                          | 89                                 | ( <i>Pseudoptera</i> ) <i>fibrosa</i> .....     | 97, 263                                        |
| <i>Protarea</i> .....                          | 155                                | <i>propleura</i> .....                          | 143                                            |
| <i>vetusta</i> .....                           | 155                                | <i>sublevis</i> .....                           | <b>260, 263</b>                                |
| <i>Protaspongia</i> .....                      | 189                                | ( <i>Pterinea</i> ) <i>morganensis</i> .....    | 49                                             |
| <i>fenestrata</i> .....                        | 189                                | !! <i>stabilitatis</i> .....                    | <b>155</b>                                     |
| <i>Protaster</i> .....                         | 78, 83                             | <i>subgibbosa</i> .....                         | 47                                             |
| <i>f granuliferus</i> .....                    | 70, 78                             | <i>triangularis</i> .....                       | 47                                             |
| <i>f gregarius</i> .....                       | 83                                 | <i>Pteridæ</i> .....                            | <b>29, 30</b>                                  |
| <i>Prothyris</i> .....                         | 74, 89                             | 32, 33, 97, 110, 111, 132, 133, 260, 267, 270   |                                                |
| <i>elegans</i> .....                           | <b>69, 74</b>                      | <i>Pterinæ</i> .....                            | 32, 33                                         |
| <i>meeki</i> .....                             | 76                                 | <i>Pterinea</i> .....                           | 29, 45, 56, 58, 59, 194, 196                   |
| <i>Protista</i> .....                          | 154                                | <i>fiabella</i> .....                           | 194                                            |
| <i>Prosobranchiata</i> .....                   | 32, 34                             | <i>macroptera</i> .....                         | 23                                             |
| <i>Prosopocephala</i> .....                    | 132, 264                           | ( <i>Monopteria</i> ) <i>gibbosa</i> .....      | <b>41, 45</b>                                  |
| <i>Protocardia</i> .....                       | 34, 92, 99, 218                    | <i>newarkensis</i> .....                        | <b>194</b>                                     |
| ( <i>Leptocardia</i> ?) <i>pertenuis</i> ..... | 100                                | <i>pintoensis</i> .....                         | <b>190</b>                                     |
| <i>rara</i> .....                              | 100                                | ( <i>Pteronites</i> ?) <i>newarkensis</i> ..... | <b>67</b>                                      |
| <i>subquadrata</i> .....                       | 100                                | <i>f subpapyracea</i> .....                     | <b>41, 58</b>                                  |
| ( <i>Protocardia</i> ) <i>salinænsis</i> ..... | 99                                 | <i>thebesensis</i> .....                        | 56                                             |
| <i>scitula</i> .....                           | 92                                 | <i>undulata</i> .....                           | <b>59</b>                                      |
| <i>shumardi</i> .....                          | 34                                 | <i>Pterintinæ</i> .....                         | <b>29, 31, 33</b>                              |
| <i>Protocaris</i> .....                        | <b>199</b>                         | <i>Pterinopecten</i> .....                      | 106                                            |
| <i>marshi</i> .....                            | <b>199</b>                         | <i>hoosacensis</i> .....                        | <b>196</b>                                     |
| <i>Protocardium</i> .....                      | 268, 271                           | <i>epio</i> .....                               | <b>196</b>                                     |
| <i>curtum</i> .....                            | 271                                | <i>Pterocerella</i> .....                       | 48                                             |

|                                                                                                        | Page.                      |
|--------------------------------------------------------------------------------------------------------|----------------------------|
| <i>Pterocerella tippana</i> .....                                                                      | 48                         |
| <i>Pterocephalus</i> .....                                                                             | 190, 234                   |
| <i>Pterophyllum robustum</i> .....                                                                     | <b>246</b>                 |
| <i>fragile</i> .....                                                                                   | <b>246</b>                 |
| <i>Pteropoda</i> ..... 28, 31, 39, 56, 67, 84, 89, 118, 126, 138,<br>149, 151, 165, 189, 191, 195, 198 |                            |
| <i>Pterotoocrinus</i> .....                                                                            | 44                         |
| <i>chesterensis</i> .....                                                                              | 44                         |
| <i>crassus</i> .....                                                                                   | 44                         |
| <i>Ptilodictya</i> ..... 78, 80, 90, 144, 147, 151, 163                                                |                            |
| ( <i>Stictopora</i> ) <i>carbonaria</i> .....                                                          | <b>67</b> , 90             |
| <i>gilberti</i> .....                                                                                  | <b>66</b> , 80             |
| <i>sarcata</i> .....                                                                                   | 90                         |
| <i>shafferi</i> .....                                                                                  | <b>68</b> , 78             |
| <i>triangulata</i> .....                                                                               | <b>144</b> , 147, 151, 163 |
| <i>Ptychaspis</i> .....                                                                                | 186, 190, 234              |
| <i>minuta</i> .....                                                                                    | 190                        |
| <i>pusulosa</i> .....                                                                                  | <b>234</b>                 |
| <i>speciosus</i> .....                                                                                 | <b>186</b>                 |
| <i>Ptychoceras</i> .....                                                                               | 104, 265                   |
| <i>crassum</i> .....                                                                                   | <b>261</b> , 265           |
| <i>leai</i> .....                                                                                      | 49                         |
| <i>meekianum</i> .....                                                                                 | <b>261</b> , 265           |
| <i>mortoni</i> .....                                                                                   | <b>17</b> , 104            |
| <i>verneuilli</i> .....                                                                                | 49                         |
| <i>Ptychoceratids</i> .....                                                                            | 104                        |
| <i>Ptychodus whipplei</i> .....                                                                        | <b>243</b> , 246           |
| <i>Ptychoparia</i> ..... 129, 190, 191, 198, 199                                                       |                            |
| ? <i>annectans</i> .....                                                                               | <b>191</b>                 |
| <i>anytus</i> .....                                                                                    | 190                        |
| ( <i>Euloma</i> ?) <i>affinis</i> .....                                                                | <b>190</b>                 |
| <i>dissimilis</i> .....                                                                                | <b>190</b>                 |
| <i>granulosus</i> .....                                                                                | 190                        |
| <i>hagueli</i> .....                                                                                   | 190                        |
| <i>laeviceps</i> .....                                                                                 | <b>190</b>                 |
| <i>linnaesonii</i> .....                                                                               | <b>190</b>                 |
| <i>nitidus</i> .....                                                                                   | 190                        |
| <i>occidentalis</i> .....                                                                              | 190                        |
| <i>orestes</i> .....                                                                                   | 190                        |
| var. <i>therasites</i> .....                                                                           | 190                        |
| <i>onangondiana</i> .....                                                                              | 198                        |
| var. <i>aurore</i> .....                                                                               | 199                        |
| <i>oweni</i> .....                                                                                     | 190                        |
| <i>pernasutus</i> .....                                                                                | <b>190</b>                 |
| <i>prospectensis</i> .....                                                                             | <b>190</b>                 |
| ( <i>Pterocephalus</i> ) <i>laticeps</i> .....                                                         | 190                        |
| <i>occidens</i> .....                                                                                  | <b>190</b>                 |
| <i>quadrata</i> .....                                                                                  | 190                        |
| <i>robbei</i> .....                                                                                    | 198                        |
| <i>regersi</i> .....                                                                                   | <b>199</b>                 |
| <i>similis</i> .....                                                                                   | <b>190</b>                 |
| var. <i>robustus</i> .....                                                                             | 190                        |
| ( <i>Solenopleura</i> ?) <i>breviceps</i> .....                                                        | <b>190</b>                 |
| <i>tener</i> .....                                                                                     | 199                        |
| <i>uniusulcatus</i> .....                                                                              | 190                        |
| <i>Ptychophyllum</i> .....                                                                             | 108                        |
| ? <i>infundibulum</i> .....                                                                            | <b>108</b>                 |
| <i>Ptychopteria</i> .....                                                                              | 196                        |
| <i>protoforme</i> .....                                                                                | <b>196</b>                 |
| <i>Pulmonaria</i> .....                                                                                | 61                         |
| <i>Pulmonata</i> .....                                                                                 | 102, 105, 107              |
| <i>Pulmonifera</i> .....                                                                               | 34, 135, 197               |
| — ? .....                                                                                              | 264                        |
| <i>Psilomya</i> .....                                                                                  | 101, 127                   |
| <i>Pupa</i> .....                                                                                      | 137, 159                   |

|                                                                                                                                                                                           | Page.               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| <i>Pupa arenula</i> .....                                                                                                                                                                 | 137, 159, 170       |
| <i>atavuncula</i> .....                                                                                                                                                                   | <b>159</b> , 170    |
| <i>bigabyi</i> .....                                                                                                                                                                      | 167                 |
| <i>helicoides</i> .....                                                                                                                                                                   | <b>16</b>           |
| <i>incolata</i> .....                                                                                                                                                                     | <b>137</b> , 170    |
| <i>leidyi</i> .....                                                                                                                                                                       | <b>77</b>           |
| ( <i>Leucochella</i> ) <i>incolata</i> .....                                                                                                                                              | 159                 |
| <i>vermillionensis</i> .....                                                                                                                                                              | 167                 |
| <i>vetusta</i> .....                                                                                                                                                                      | 167                 |
| <i>Purpura</i> .....                                                                                                                                                                      | 212                 |
| <i>Pyramis</i> .....                                                                                                                                                                      | 225                 |
| <i>Pyramidellidae</i> .....                                                                                                                                                               | 103, 134            |
| <i>Pyramimitracostata</i> .....                                                                                                                                                           | 221                 |
| <i>Pyramus</i> .....                                                                                                                                                                      | <b>224</b>          |
| <i>ellipticus</i> .....                                                                                                                                                                   | <b>224</b>          |
| <i>myliformis</i> .....                                                                                                                                                                   | <b>224</b>          |
| <i>Pyrgorhynchus mortoni</i> .....                                                                                                                                                        | 222                 |
| <i>Pyrgulifera</i> .....                                                                                                                                                                  | <b>70</b> , 95, 162 |
| <i>humerosa</i> .....                                                                                                                                                                     | 95, 112, 162, 168   |
| <i>Pyrifusus</i> .....                                                                                                                                                                    | 103                 |
| ? <i>flexicostatus</i> .....                                                                                                                                                              | 49                  |
| ? <i>haleanus</i> .....                                                                                                                                                                   | 49                  |
| ? <i>impressus</i> .....                                                                                                                                                                  | 49                  |
| <i>intertextus</i> .....                                                                                                                                                                  | 49                  |
| ( <i>Neptunella</i> ) <i>intertextus</i> .....                                                                                                                                            | 103                 |
| <i>newberryi</i> .....                                                                                                                                                                    | 103                 |
| <i>subturrites</i> .....                                                                                                                                                                  | 103                 |
| <i>newberryi</i> .....                                                                                                                                                                    | 49                  |
| <i>subturrites</i> .....                                                                                                                                                                  | 49                  |
| <i>Pyrina parryi</i> .....                                                                                                                                                                | <b>233</b>          |
| <i>Pyropsis</i> .....                                                                                                                                                                     | 103                 |
| <i>bairdi</i> .....                                                                                                                                                                       | 103                 |
| var. <i>rotula</i> .....                                                                                                                                                                  | 103                 |
| <i>Pyrula bairdi</i> .....                                                                                                                                                                | <b>14</b> , 16, 49  |
| <i>glabra</i> .....                                                                                                                                                                       | <b>256</b>          |
| <i>modesta</i> .....                                                                                                                                                                      | 50                  |
| Q.                                                                                                                                                                                        |                     |
| <i>Quadrula</i> .....                                                                                                                                                                     | 105                 |
| R.                                                                                                                                                                                        |                     |
| <i>Radiata</i> .... 33, 37, 40, 41, 42, 43, 44, 45, 54, 55, 56, 57,<br>58, 60, 68, 71, 77, 85, 94, 96, 108, 109, 117, 133, 136,<br>138, 142, 144, 154, 165, 226, 227, 235, 236, 260, 261. |                     |
| <i>Radix</i> .....                                                                                                                                                                        | 105                 |
| <i>Radula</i> .....                                                                                                                                                                       | 266                 |
| <i>acutilineata</i> .....                                                                                                                                                                 | 266                 |
| <i>pelagica</i> .....                                                                                                                                                                     | 266                 |
| <i>reticulata</i> .....                                                                                                                                                                   | 266                 |
| <i>Raphistoma</i> ..... 55, 108, 130, 191, 224                                                                                                                                            |                     |
| <i>acuta</i> .....                                                                                                                                                                        | <b>234</b>          |
| <i>lenticularis</i> .....                                                                                                                                                                 | 55                  |
| <i>nasoni</i> .....                                                                                                                                                                       | 191                 |
| ? <i>rotuliformis</i> .....                                                                                                                                                               | 108                 |
| ? <i>trochileus</i> .....                                                                                                                                                                 | 108, 130            |
| <i>Receptaculites</i> .....                                                                                                                                                               | 55, 91, 129, 190    |
| — ? .....                                                                                                                                                                                 | 55, 129             |
| <i>ellipticus</i> .....                                                                                                                                                                   | 190                 |
| <i>elongatus</i> .....                                                                                                                                                                    | <b>190</b>          |
| <i>formosus</i> .....                                                                                                                                                                     | <b>64</b> , 91      |
| <i>globularis</i> .....                                                                                                                                                                   | 55                  |
| <i>mammillaris</i> .....                                                                                                                                                                  | 190                 |
| <i>oweni</i> .....                                                                                                                                                                        | 55                  |
| <i>Remopleurides</i> .....                                                                                                                                                                | 185                 |
| <i>striatulus</i> .....                                                                                                                                                                   | <b>185</b>          |

|                                                  | Page.                                                                                                                   |                                      | Page.                          |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------|
| <i>Benscelleria</i> .....                        | 57, 63                                                                                                                  | <i>Rhynchonella pugnus</i> .....     | 133                            |
| <i>conradi</i> .....                             | 57                                                                                                                      | <i>pustulosa</i> .....               | 116, 225                       |
| <i>lævis</i> .....                               | 63                                                                                                                      | <i>rockymontana</i> .....            | 131                            |
| <i>Requienia</i> .....                           | 176                                                                                                                     | <i>speciosa</i> .....                | 57                             |
| <i>patagiata</i> .....                           | 176                                                                                                                     | <i>subtrigona</i> .....              | 94                             |
| <i>texana</i> .....                              | 176                                                                                                                     | <i>tennesseensis</i> .....           | 148                            |
| <i>Retepora archimedes</i> .....                 | 248                                                                                                                     | <i>tethys</i> .....                  | 133                            |
| <i>indianensis</i> .....                         | 248                                                                                                                     | <i>texana</i> .....                  | 257                            |
| <i>Retzia</i> .....                              | 30, 72, 79, 116, 131, 147, 163, 178, 196, 257                                                                           | <i>thera</i> .....                   | 196                            |
| <i>acambonia</i> .....                           | 119                                                                                                                     | <i>uta</i> .....                     | 20, 52, 131, 177, 245          |
| ( <i>Ambona</i> ?) <i>altirostris</i> .....      | 119                                                                                                                     | <i>wasatchensis</i> .....            | 127, 13                        |
| <i>compressa</i> .....                           | 30                                                                                                                      | <i>wilmingtonensis</i> .....         | 228                            |
| <i>meekana</i> .....                             | 256                                                                                                                     | <i>Rhynchonellidae</i> .....         | 30, 33, 62, 108, 109, 131, 262 |
| <i>meekiana</i> .....                            | 257                                                                                                                     | <i>Rhytophorus</i> .....             | 95, 112, 137, 161              |
| <i>mermonii</i> .....                            | 20, 53, 131, 178                                                                                                        | <i>meekii</i> .....                  | 137, 161, 168                  |
| <i>papillata</i> .....                           | 256, 257                                                                                                                | <i>priscus</i> .....                 | 95, 112, 161, 168              |
| <i>punctulifera</i> .....                        | 73                                                                                                                      | <i>Rimella curviflata</i> .....      | 48                             |
| <i>radialis</i> .....                            | 196                                                                                                                     | <i>Ringicula acutispira</i> .....    | 48                             |
| <i>serpicata</i> .....                           | 116                                                                                                                     | <i>biplicata</i> .....               | 221                            |
| ( <i>Trematospira</i> ) <i>granulifera</i> ..... | 68, 79                                                                                                                  | <i>pulchella</i> .....               | 48                             |
| <i>woosteri</i> .....                            | 147, 163                                                                                                                | <i>subpellucida</i> .....            | 48                             |
| <i>Rhaphoneis foliacea</i> .....                 | 229                                                                                                                     | <i>Ringiculide</i> .....             | 161                            |
| <i>lancoolata</i> .....                          | 229                                                                                                                     | <i>Ringiculina</i> .....             | 29                             |
| <i>oregonica</i> .....                           | 229                                                                                                                     | <i>Ringinella subpellucida</i> ..... | 48                             |
| <i>Rhiphidoglossa</i> .....                      | 102, 132, 133, 134                                                                                                      | <i>Risacoidæ</i> .....               | 104                            |
| <i>Rhiphidoglossata</i> .....                    | 32, 34                                                                                                                  | <i>Rostellaria</i> ? .....           | 219                            |
| <i>Rhipisopoda</i> .....                         | 31, 129, 131, 190                                                                                                       | <i>americana</i> .....               | 48, 256                        |
| <i>Rhodia</i> .....                              | 106                                                                                                                     | <i>biangulata</i> .....              | 14, 48                         |
| <i>Rhodocrinus</i> .....                         | 59, 150, 163                                                                                                            | ? <i>collina</i> .....               | 219                            |
| <i>nanus</i> .....                               | 40, 50                                                                                                                  | ( <i>texana</i> ) .....              | 219                            |
| <i>vesperalis</i> .....                          | 150, 163                                                                                                                | <i>fusiformis</i> .....              | 13                             |
| <i>Rhombopora</i> .....                          | 71, 131                                                                                                                 | <i>indurata</i> .....                | 206                            |
| <i>lepidodendroides</i> .....                    | 71, 131                                                                                                                 | <i>nebrascensis</i> .....            | 48, 274                        |
| <i>Rhynchonella</i> .....                        | 24, 30, 41, 57, 59, 72, 78, 80, 85, 116, 118, 126, 127, 130, 131, 148, 163, 165, 177, 193, 196, 235, 236, 245, 257, 262 | <i>rostrata</i> .....                | 48                             |
| — ? .....                                        | 30, 33, 38, 62, 257, 274                                                                                                | <i>Rostellites</i> .....             | 214, 219                       |
| <i>angulata</i> .....                            | 52                                                                                                                      | <i>bellus</i> .....                  | 48                             |
| <i>argenturica</i> .....                         | 126, 130                                                                                                                | <i>biplicatus</i> .....              | 49                             |
| <i>capax</i> .....                               | 78, 148                                                                                                                 | <i>conradi</i> .....                 | 49                             |
| <i>caput testudinis</i> .....                    | 118                                                                                                                     | <i>nasutus</i> .....                 | 49                             |
| <i>carolina</i> .....                            | 80                                                                                                                      | <i>texana</i> .....                  | 219                            |
| <i>castanea</i> .....                            | 62, 193                                                                                                                 | <i>texanus</i> .....                 | 214                            |
| <i>dentata</i> .....                             | 78, 148                                                                                                                 | <i>Rostrifera</i> .....              | 35                             |
| <i>duplicata</i> .....                           | 183                                                                                                                     | <i>Rotella</i> .....                 | 153                            |
| <i>emmons</i> .....                              | 193, 235                                                                                                                | <i>nana</i> .....                    | 221                            |
| <i>endilehi</i> .....                            | 58, 163                                                                                                                 | <i>verruculifera</i> .....           | 159                            |
| <i>eurokensis</i> .....                          | 196                                                                                                                     | <i>Rotundaria</i> .....              | 105                            |
| <i>gnathophora</i> .....                         | 30, 236                                                                                                                 |                                      |                                |
| <i>guadalupensis</i> .....                       | 256, 257                                                                                                                |                                      |                                |
| <i>horafordii</i> .....                          | 193                                                                                                                     |                                      |                                |
| <i>indentata</i> .....                           | 257                                                                                                                     |                                      |                                |
| ( <i>Laelorhynchus</i> ) <i>laura</i> .....      | 193                                                                                                                     |                                      |                                |
| <i>nevadensis</i> .....                          | 193                                                                                                                     |                                      |                                |
| <i>sinuatus</i> .....                            | 193                                                                                                                     |                                      |                                |
| <i>metallica</i> .....                           | 127, 131                                                                                                                |                                      |                                |
| <i>missouriensis</i> .....                       | 41, 59                                                                                                                  |                                      |                                |
| <i>myrina</i> .....                              | 236, 262                                                                                                                |                                      |                                |
| <i>neglecta</i> .....                            | 80                                                                                                                      |                                      |                                |
| <i>var. acrobina</i> .....                       | 70                                                                                                                      |                                      |                                |
| <i>nitens</i> .....                              | 49                                                                                                                      |                                      |                                |
| <i>occidentalis</i> .....                        | 193                                                                                                                     |                                      |                                |
| <i>opposita</i> .....                            | 116                                                                                                                     |                                      |                                |
| <i>paraglobosa</i> .....                         | 72, 85                                                                                                                  |                                      |                                |
| <i>parvula</i> .....                             | 115, 165                                                                                                                |                                      |                                |



|                                        | Page.                                                  |                                                      | Page.                                          |
|----------------------------------------|--------------------------------------------------------|------------------------------------------------------|------------------------------------------------|
| <i>Sanguinolites retusus</i> .....     | 197                                                    | <i>Scaphites nodosus</i> var. <i>plenus</i> .....    | 21, 104                                        |
| <i>salteri</i> .....                   | 197                                                    | <i>quadrangularis</i> .....                          | 104, 265                                       |
| <i>sanduskyensis</i> .....             | 66, 80                                                 | <i>ventricosus</i> .....                             | 98, 104                                        |
| ? <i>sanduskyensis</i> .....           | 194                                                    | <i>vermiculus</i> .....                              | 159                                            |
| <i>simplex</i> .....                   | 197                                                    | <i>vermiformis</i> .....                             | 98, 104                                        |
| <i>striatus</i> .....                  | 197                                                    | <i>warreni</i> .....                                 | 104, 135, 265                                  |
| <i>Sanguinolites ventricosus</i> ..... | 194                                                    | <i>wyomingensis</i> .....                            | 265                                            |
| <i>Sarcinula</i> .....                 | 223                                                    | <i>Scaphitida</i> .....                              | 104, 135, 265                                  |
| <i>costata</i> .....                   | 247                                                    | <i>Scaphoides</i> .....                              | 33                                             |
| ? <i>obsoleta</i> .....                | 232                                                    | <i>Scenella</i> .....                                | 189                                            |
| (Porites ?) <i>glabra</i> .....        | 247                                                    | ? <i>conula</i> .....                                | 189                                            |
| <i>Saxicava</i> .....                  | 211, 213, 260, 263                                     | <i>Schænaster</i> .....                              | 44, 60                                         |
| <i>abrupta</i> .....                   | 211, 213                                               | <i>fimbriatus</i> .....                              | 44                                             |
| <i>jurassica</i> .....                 | 260, 263                                               | <i>wachemuthi</i> .....                              | 40, 60                                         |
| <i>Saxicavida</i> .....                | 101, 260, 271                                          | <i>Schizambon</i> .....                              | 190                                            |
| <i>Scala forshayii</i> .....           | 48                                                     | <i>typicalis</i> .....                               | 190                                            |
| <i>Scalaria</i> .....                  | 205, 287                                               | <i>Schizocrinus nodosus</i> ? .....                  | 231                                            |
| <i>cerethiformis</i> .....             | 14                                                     | <i>Schizodesma</i> .....                             | 100                                            |
| <i>expansa</i> .....                   | 205                                                    | <i>Schizodus</i> .....                               | 24, 32, 44, 45, 73, 86, 89, 132, 178, 194, 197 |
| <i>forshayii</i> .....                 | 48                                                     | ? .....                                              | 45                                             |
| <i>texana</i> .....                    | 48                                                     | <i>amplus</i> .....                                  | 64, 86                                         |
| <i>unilineata</i> .....                | 237                                                    | <i>chesterensis</i> .....                            | 24, 44                                         |
| <i>Scalpellum inequicostatum</i> ..... | 48                                                     | <i>cuneatus</i> .....                                | 90, 197                                        |
| <i>Scambula</i> .....                  | 268                                                    | <i>curtiforme</i> .....                              | 197                                            |
| <i>perplana</i> .....                  | 268                                                    | <i>curtus</i> .....                                  | 41, 73, 86                                     |
| <i>Scaphiocrinus</i> .....             | 26, 43, 60, 72, 82, 83, 84, 85, 91, 117, 144, 149, 165 | (Cytherodon) <i>orbicularis</i> .....                | 194                                            |
| <i>olio</i> .....                      | 82                                                     | <i>deparcus</i> .....                                | 197                                            |
| <i>delicatus</i> .....                 | 82                                                     | <i>medinaensis</i> .....                             | 67, 89                                         |
| <i>depressus</i> .....                 | 64                                                     | <i>obscurus</i> .....                                | 51                                             |
| <i>fiacellus</i> .....                 | 82                                                     | <i>ovatus</i> .....                                  | 32                                             |
| <i>gibsoni</i> .....                   | 144, 149, 165                                          | (Prisconia) <i>perelegans</i> .....                  | 86                                             |
| <i>gurleyi</i> .....                   | 144, 149, 165                                          | <i>rossicus</i> .....                                | 51, 52, 87                                     |
| ? <i>hemisphaericus</i> .....          | 72                                                     | <i>subtrigonalis</i> .....                           | 67                                             |
| <i>juvenis</i> .....                   | 82                                                     | <i>pintoensis</i> .....                              | 197                                            |
| <i>macrodaetylus</i> .....             | 82                                                     | <i>wheeleri</i> .....                                | 73, 132, 178                                   |
| <i>nanus</i> .....                     | 82                                                     | <i>Schizopyga</i> .....                              | 215, 216                                       |
| <i>notabilis</i> .....                 | 82                                                     | <i>californiana</i> .....                            | 215, 216                                       |
| <i>penicillus</i> .....                | 82                                                     | <i>Schizothærus</i> .....                            | 211, 213                                       |
| <i>rudis</i> .....                     | 82                                                     | <i>nutalli</i> .....                                 | 211, 213                                       |
| <i>rusticellus</i> .....               | 117                                                    | <i>traski</i> .....                                  | 211                                            |
| <i>scalaris</i> .....                  | 82                                                     | <i>Schoenaster</i> .....                             | 24                                             |
| <i>striatus</i> .....                  | 82                                                     | <i>Scoliotoma</i> .....                              | 195                                            |
| <i>tethys</i> .....                    | 82                                                     | <i>americana</i> .....                               | 195                                            |
| (Zeacrinus) <i>asper</i> .....         | 82                                                     | <i>Scorpio carbonarius</i> .....                     | 53                                             |
| <i>lyra</i> .....                      | 82                                                     | <i>Scutella</i> .....                                | 205                                            |
| <i>scobina</i> .....                   | 82                                                     | <i>aberti</i> .....                                  | 205                                            |
| <i>serratus</i> .....                  | 82                                                     | <i>crustuloides</i> .....                            | 222                                            |
| <i>Scaphites</i> .....                 | 23, 104, 135, 250, 265                                 | <i>jonesii</i> .....                                 | 222                                            |
| (Ammonites ?) <i>compressus</i> .....  | 250                                                    | <i>lyelli</i> .....                                  | 220                                            |
| <i>nodosus</i> .....                   | 250                                                    | <i>pileus-sinensis</i> .....                         | 222                                            |
| (Discoscapites) <i>abyssinus</i> ..... | 104                                                    | <i>rogersi</i> .....                                 | 222                                            |
| <i>cheyennensis</i> .....              | 104                                                    | <i>Seacrinus</i> (Prisconia) <i>perelegans</i> ..... | 64                                             |
| <i>conradi</i> .....                   | 104                                                    | <i>Sedide</i> .....                                  | 98                                             |
| var. <i>gu-</i> .....                  |                                                        | <i>Sedgewickia</i> .....                             | 32, 33, 61, 79, 236                            |
| <i>loius</i> .....                     | 104                                                    | <i>altirostrata</i> .....                            | 32                                             |
| <i>conradi</i> var. <i>in-</i> .....   |                                                        | <i>concava</i> .....                                 | 32, 236                                        |
| <i>termedius</i> .....                 | 104                                                    | ? <i>compressa</i> .....                             | 68, 79                                         |
| <i>mandanensis</i> .....               | 104                                                    | ? <i>fragilis</i> .....                              | 68, 79                                         |
| <i>nicoletii</i> .....                 | 104                                                    | (Grammysia ?) <i>neglecta</i> .....                  | 68, 79                                         |
| <i>larvæformis</i> .....               | 19, 104                                                | (Sanguinolites) ? <i>subarcuata</i> .....            | 33, 61                                         |
| <i>mandanensis</i> .....               | 274                                                    | <i>topekaensis</i> .....                             | 32                                             |
| <i>nicoletii</i> .....                 | 274                                                    | <i>Semicassis sowerbii</i> .....                     | 221                                            |
| <i>nodosus</i> .....                   | 265                                                    | <i>Seila</i> .....                                   | 102                                            |
| var. <i>brevis</i> .....               | 104, 265                                               | <i>Septopora cestrinensis</i> .....                  | 87                                             |
|                                        |                                                        | <i>Septastrea</i> ? <i>sexradiata</i> .....          | 46                                             |

|                                             | Page.                  |                                                  | Page.                                               |
|---------------------------------------------|------------------------|--------------------------------------------------|-----------------------------------------------------|
| <i>Serpula</i> .....                        | 35, 105, 135, 144, 165 | <i>Soleniscus planus</i> .....                   | 151, 175, 178                                       |
| <i>inaita</i> .....                         | 144, 165               | <i>typicus</i> .....                             | 25, 44, 175, 178                                    |
| <i>intrica</i> .....                        | 133                    | <i>Solenocaris</i> .....                         | 80                                                  |
| <i>(Spirorbis) planorbites</i> .....        | 51                     | <i>Solenochilus</i> .....                        | 65, 104                                             |
| <i>† tennicarinata</i> .....                | 105                    | <i>Solenocoeloma</i> .....                       | 101, 122, 264                                       |
| <i>† tennicarinatus</i> .....               | 17                     | <i>Solenoides</i> .....                          | 230                                                 |
| <i>Serpulidae</i> .....                     | 35, 105, 135           | <i>iovenais</i> .....                            | 230                                                 |
| <i>Serrifusus</i> .....                     | 103                    | <i>Solenomya</i> .....                           | 45, 87, 90, 197                                     |
| <i>Sigaretus scopulosum</i> .....           | 50                     | <i>† anodontoides</i> .....                      | 90                                                  |
| <i>scopulosus</i> .....                     | 206                    | <i>biarmica</i> .....                            | 50                                                  |
| <i>Siliqua</i> .....                        | 270                    | <i>curta</i> .....                               | 197                                                 |
| <i>cretacea</i> .....                       | 270                    | <i>(Janeia) vetusta</i> .....                    | 66                                                  |
| <i>Sinistralia</i> .....                    | 103                    | <i>radiata</i> .....                             | 45                                                  |
| <i>Sinuopallia</i> .....                    | 264, 269               | <i>Solenopsis</i> .....                          | 74                                                  |
| <i>Sinum scopulosum</i> .....               | 50                     | <i>solenoides</i> .....                          | 74                                                  |
| <i>Siphonariidae</i> .....                  | 102, 112               | <i>Solidula bicipitata</i> .....                 | 43                                                  |
| <i>?</i> .....                              | 264                    | <i>Solyma</i> .....                              | 200                                                 |
| <i>Siphonida</i> .....                      | 268                    | <i>lineolata</i> .....                           | 200                                                 |
| <i>Siphonostomata</i> .....                 | 264                    | <i>Spatangidae</i> .....                         | 96                                                  |
| <i>Siphonotreta</i> <i>† curta</i> .....    | 225                    | <i>Sphæra</i> .....                              | 110                                                 |
| <i>Skenidium</i> .....                      | 192                    | <i>whitneyi</i> .....                            | 110                                                 |
| <i>devonicum</i> .....                      | 192                    | <i>Sphærella inflata</i> .....                   | 220                                                 |
| <i>Smithia</i> .....                        | 62, 108                | <i>Sphærexochus</i> .....                        | 91                                                  |
| <i>hennahii</i> .....                       | 108                    | <i>romingeri</i> .....                           | 91                                                  |
| <i>(Pachyphyllum) woodmani</i> .....        | 123                    | <i>Sphæriola</i> .....                           | 90, 260, 264, 269                                   |
| <i>verrilli</i> .....                       | 62                     | <i>† cordata</i> .....                           | 90                                                  |
| <i>Solariidae</i> .....                     | 108, 180               | <i>† endotrachys</i> .....                       | 90                                                  |
| <i>Solariorbis depressus</i> .....          | 221                    | <i>† obliqua</i> .....                           | 98                                                  |
| <i>lineatus</i> .....                       | 221                    | <i>transversa</i> .....                          | 260, 264                                            |
| <i>nitens</i> .....                         | 221                    | <i>umbonata</i> .....                            | 260                                                 |
| <i>Solarium</i> .....                       | 180                    | <i>† warrenana</i> .....                         | 90                                                  |
| <i>abyssinus</i> .....                      | 48                     | <i>Sphærium</i> .....                            | 105, 112, 135, 160                                  |
| <i>henrici</i> .....                        | 221                    | <i>— ?</i> .....                                 | 135                                                 |
| <i>ornatum</i> .....                        | 221                    | <i>formosum</i> .....                            | 105, 160, 168                                       |
| <i>pseudogranulatum</i> .....               | 221                    | <i>idahoense</i> .....                           | 65, 112, 166, 170                                   |
| <i>wallalense</i> .....                     | 180                    | <i>planum</i> .....                              | 21, 105, 160, 168                                   |
| <i>Solecurnus</i> <i>† ellipticus</i> ..... | 225                    | <i>recticardinale</i> .....                      | 21, 105, 160, 168                                   |
| <i>(Psammobia ?) planulatus</i> .....       | 225                    | <i>rugosum</i> .....                             | 65, 112, 166, 170                                   |
| <i>Solemya</i> .....                        | 24, 80, 99, 153        | <i>subellipticum</i> .....                       | 105, 160, 168                                       |
| <i>bilix</i> .....                          | 153, 157               | <i>Sphærocrinus</i> .....                        | 37                                                  |
| <i>(Janeia) vetusta</i> .....               | 80                     | <i>Sphenodiscus</i> .....                        | 104                                                 |
| <i>protexta</i> .....                       | 50                     | <i>Sphenophyllum</i> .....                       | 155                                                 |
| <i>radiata</i> .....                        | 24                     | <i>Sphenophyllum emarginatum</i> .....           | 155                                                 |
| <i>supplicata</i> .....                     | 99                     | <i>schlotheimi</i> .....                         | 155                                                 |
| <i>ventricosa</i> .....                     | 205                    | <i>Sphenopteris</i> .....                        | 149, 246                                            |
| <i>Solemyidae</i> .....                     | 99                     | <i>acuta</i> .....                               | 149                                                 |
| <i>Solenocurtus</i> .....                   | 50                     | <i>fremonti</i> .....                            | 231                                                 |
| <i>† dakotensis</i> .....                   | 18                     | <i>lobifolia</i> .....                           | 226                                                 |
| <i>diegoensis</i> .....                     | 220                    | <i>paucifolia</i> .....                          | 231                                                 |
| <i>irradians</i> .....                      | 48                     | <i>triloba</i> .....                             | 231                                                 |
| <i>parallelus</i> .....                     | 220                    | <i>trifoliata</i> .....                          | 231                                                 |
| <i>(Solecurnus ?) ellipticus</i> .....      | 223                    | <i>Sphenopterium</i> .....                       | 24, 41, 43                                          |
| <i>planulatus</i> .....                     | 223                    | <i>compressum</i> .....                          | 24, 43                                              |
| <i>supplicatus</i> .....                    | 15                     | <i>cuneatum</i> .....                            | 24, 43                                              |
| <i>Solenidae</i> .....                      | 101, 279               | <i>enorme</i> .....                              | 24, 41                                              |
| <i>Soleniscus</i> .....                     | 25, 46, 151, 178       | <i>var. depressum</i> .....                      | 41                                                  |
| <i>brevis</i> .....                         | 151                    | <i>obtusum</i> .....                             | 24, 43                                              |
| <i>(Macrochellus) funiformis</i> .....      | 175, 178               | <i>Sphærocoryphe</i> .....                       | 185                                                 |
| <i>medialis</i> .....                       | 175, 178               | <i>robustus</i> .....                            | 185                                                 |
| <i>newberryi</i> .....                      | 175, 178               | <i>Spiractæon</i> .....                          | 29                                                  |
| <i>pulchra formis</i> .....                 | 175, 178               | <i>Spiraxis</i> .....                            | 221                                                 |
| <i>ponderosa</i> .....                      | 175, 178               | <i>Spirifer</i> .....                            | 30, 31, 41, 44, 57, 58, 61, 62, 73, 89, 90, 91, 92, |
| <i>primigenius</i> .....                    | 175, 178               | 94, 108, 109, 116, 118, 127, 130, 131, 148, 149, |                                                     |
| <i>texanus</i> .....                        | 175, 178               | 155, 163, 165, 178, 225, 233, 245, 253, 257      |                                                     |
| <i>ventricosus</i> .....                    | 175, 178               | <i>— ?</i> .....                                 | 20, 26, 253                                         |

|                                     | Page.                                                    |
|-------------------------------------|----------------------------------------------------------|
| <i>Irifer acuminata</i> .....       | 149                                                      |
| <i>agelaius</i> .....               | 163                                                      |
| <i>annectans</i> .....              | <b>196</b>                                               |
| <i>cameratus</i> .....              | 20, 52, 73, 85, 94, 131, 149,<br>178, 233, 245, 246, 257 |
| <i>carteri</i> .....                | 89                                                       |
| <i>cedarensis</i> .....             | 250                                                      |
| <i>centronatus</i> .....            | 130                                                      |
| <i>compactus</i> .....              | <b>63</b>                                                |
| <i>cupidatus</i> .....              | 109                                                      |
| <i>darwinii</i> .....               | 225                                                      |
| <i>desiderata</i> .....             | <b>196</b>                                               |
| <i>duodecicostratus</i> .....       | 225                                                      |
| <i>englemanni</i> .....             | 57, 94, 108                                              |
| <i>euritines</i> .....              | 149, 250                                                 |
| <i>extenuatus</i> .....             | 130                                                      |
| <i>fastigatus</i> .....             | <b>64</b> , 91                                           |
| <i>formacula</i> .....              | 58                                                       |
| <i>fultonensis</i> .....            | 85                                                       |
| <i>glaber</i> .....                 | 225                                                      |
| <i>var. contracta</i> .....         | <b>26</b>                                                |
| <i>glans cerasus</i> .....          | <b>118</b>                                               |
| <i>gregaria</i> .....               | 149                                                      |
| <i>guadalupensis</i> .....          | 257                                                      |
| <i>hemicyclus</i> .....             | <b>57</b>                                                |
| <i>hemiplicata</i> .....            | 20, <b>232</b>                                           |
| <i>hirtus</i> .....                 | <b>116</b>                                               |
| <i>inequicostratus</i> .....        | <b>250</b>                                               |
| <i>iowensis</i> .....               | <b>250</b>                                               |
| <i>kentuckensis</i> .....           | 20, 233, 274                                             |
| <i>kennicotti</i> .....             | <b>62</b>                                                |
| <i>keokuk</i> .....                 | 92                                                       |
| <i>laminosus</i> .....              | 52                                                       |
| <i>leidy</i> .....                  | 196                                                      |
| <i>lignus</i> .....                 | <b>250</b>                                               |
| <i>lineatus</i> .....               | 20, 233, 243, 245                                        |
| <i>(Martinia) cooperensis</i> ..... | 41                                                       |
| <i>franklinii</i> .....             | <b>63</b>                                                |
| <i>glaber var. contracta</i> .....  | 44, 127,<br>131                                          |
| <i>lineatus</i> .....               | 30, 155, 178                                             |
| <i>maia</i> .....                   | 193                                                      |
| <i>meristoides</i> .....            | <b>63</b>                                                |
| <i>peculiaris</i> .....             | 180                                                      |
| <i>plano convexa</i> .....          | 178, 274                                                 |
| <i>plano convexus</i> .....         | 31, 73, 131                                              |
| <i>richardsoni</i> .....            | <b>63</b>                                                |
| <i>sublineatus</i> .....            | <b>63</b>                                                |
| <i>undifera</i> .....               | 193                                                      |
| <i>mensebachanus</i> .....          | 274                                                      |
| <i>mexicanus</i> .....              | <b>256</b> , 257                                         |
| <i>moosak paliensis</i> .....       | 52                                                       |
| <i>neglecta</i> .....               | 196                                                      |
| <i>neglectus</i> .....              | 91                                                       |
| <i>octoplicata?</i> .....           | 232                                                      |
| <i>paradoxus</i> .....              | 58                                                       |
| <i>perextensus</i> .....            | <b>58</b>                                                |
| <i>perlamellosus</i> .....          | 57                                                       |
| <i>pennatus</i> .....               | <b>250</b>                                               |
| <i>planoconvexa</i> .....           | 20, 274                                                  |
| <i>propinquus</i> .....             | 61                                                       |
| <i>radiata</i> .....                | 148                                                      |
| <i>rocky-montani</i> .....          | <b>243</b> , 245                                         |
| <i>rocky montanus</i> .....         | 131                                                      |
| <i>solidirostris</i> .....          | <b>116</b>                                               |

|                                         | Page.                                             |
|-----------------------------------------|---------------------------------------------------|
| <i>Spirifer sphalsena</i> .....         | <b>225</b>                                        |
| <i>(Spiriferina) cristata</i> .....     | 196                                               |
| <i>scobina</i> .....                    | 94                                                |
| <i>pulcher</i> .....                    | 94                                                |
| <i>striatus</i> .....                   | 130, 131, 243                                     |
| <i>var. triplicatus</i> .....           | 243                                               |
| <i>strigosus</i> .....                  | 94                                                |
| <i>subcardiiformis</i> .....            | 165                                               |
| <i>suborbicularis</i> .....             | 91                                                |
| <i>subundiferus</i> .....               | <b>58</b>                                         |
| <i>sulcifera</i> .....                  | <b>256</b> , 257                                  |
| <i>textus</i> .....                     | 149                                               |
| <i>trigonalis</i> .....                 | 196                                               |
| <i>(Trigonotreta) argentarius</i> ..... | <b>108</b>                                        |
| <i>biplicatus</i> .....                 | 89                                                |
| <i>cameratus</i> .....                  | 169                                               |
| <i>opinus</i> .....                     | 90                                                |
| <i>pinfonensis</i> .....                | <b>65</b> , 108                                   |
| <i>scobina</i> .....                    | 109                                               |
| <i>striatiformis</i> .....              | 89                                                |
| <i>strigosus</i> .....                  | 108                                               |
| <i>texanus</i> .....                    | <b>68</b>                                         |
| <i>? texanus</i> .....                  | 246                                               |
| <i>triplicata</i> .....                 | <b>232</b>                                        |
| <i>utahensis</i> .....                  | 94, 108                                           |
| <i>vespertilla</i> .....                | 225                                               |
| <i>Spirifera</i> .....                  | 193, 196, 235                                     |
| <i>— ?</i> .....                        | 193, 235                                          |
| <i>alba-pinensis</i> .....              | <b>235</b>                                        |
| <i>centronata</i> .....                 | 235                                               |
| <i>disjuncta</i> .....                  | 193                                               |
| <i>engelmanni</i> .....                 | <b>22</b> , 193                                   |
| <i>macra</i> .....                      | <b>22</b>                                         |
| <i>(Martinia) glabra</i> .....          | 193                                               |
| <i>var. nevadensis</i> .....            | 193                                               |
| <i>norwoodi</i> .....                   | <b>22</b>                                         |
| <i>parryana</i> .....                   | 193                                               |
| <i>pinfonensis</i> .....                | 319                                               |
| <i>pulchra</i> .....                    | <b>22</b>                                         |
| <i>ruricosta</i> .....                  | 193                                               |
| <i>scobina</i> .....                    | <b>22</b>                                         |
| <i>setigera</i> .....                   | 235                                               |
| <i>(Spiriferina ?) alia</i> .....       | <b>236</b>                                        |
| <i>striata</i> .....                    | 235                                               |
| <i>varicosa</i> .....                   | 193                                               |
| <i>Spiriferidae</i> .....               | 31, 62, 108, 109                                  |
| <i>Spiriferina</i> .....                | 30, 73, 109, 118, 127, 131,<br>178, 196, 236, 257 |
| <i>— ?</i> .....                        | 30, 109                                           |
| <i>billingsii</i> .....                 | <b>256</b> , 257                                  |
| <i>homfrayi ?</i> .....                 | 236                                               |
| <i>kentuckensis</i> .....               | 52, 73, 131, 178                                  |
| <i>(Martinia) glabra</i> .....          | 193                                               |
| <i>octoplicata</i> .....                | 131                                               |
| <i>pulchra</i> .....                    | 109                                               |
| <i>spinosa var. campestris</i> .....    | 127                                               |
| <i>subtexta</i> .....                   | <b>119</b>                                        |
| <i>Spirigera</i> .....                  | 127, 130, 132                                     |
| <i>Spirigera</i> <i>— ?</i> .....       | 20                                                |
| <i>monticola</i> .....                  | <b>127</b> , 130                                  |
| <i>obmaxima</i> .....                   | 130                                               |
| <i>planosulcata</i> .....               | 132                                               |
| <i>subtilita</i> .....                  | 20, 132                                           |
| <i>Spironema</i> .....                  | 48, 103                                           |
| <i>bella</i> .....                      | 48                                                |

|                                                                   | Page.              |                                                               | Page.                |
|-------------------------------------------------------------------|--------------------|---------------------------------------------------------------|----------------------|
| <i>Spironema tenuilineata</i> .....                               | 48, 103            | <i>Streptorhynchus lens</i> .....                             | 119                  |
| <i>Spirorbis</i> .....                                            | 106, 153           | <i>minor</i> .....                                            | 196                  |
| <i>! dickhauti</i> .....                                          | 153                | <i>occidentalis</i> .....                                     | 245                  |
| <i>helix</i> .....                                                | 51                 | ( <i>Orthisimia</i> ) <i>shumardianus</i> .....               | 257                  |
| <i>Spirulæa rotula</i> .....                                      | 49                 | <i>pyramidalis</i> .....                                      | 245                  |
| <i>Spondylidæ</i> .....                                           | 266                | <i>umbraculum</i> .....                                       | 245                  |
| <i>Spondylus</i> .....                                            | 217, 266           | <i>Striarca</i> .....                                         | 98                   |
| <i>dumosus</i> .....                                              | 222                | <i>Striatopora</i> .....                                      | 56, 119, 156         |
| <i>echinatus</i> .....                                            | 47                 | <i>carbonari</i> .....                                        | 119                  |
| <i>estrallensis</i> .....                                         | 215                | <i>linneana</i> .....                                         | 156                  |
| <i>estrellanus</i> .....                                          | 217                | <i>missouriensis</i> .....                                    | 56                   |
| <i>gregalis</i> .....                                             | 266                | <i>Stricklandinia</i> .....                                   | 57, 91, 135          |
| <i>Spongia</i> .....                                              | 41, 43, 56, 58, 91 | <i>castellana</i> .....                                       | 135                  |
| <i>Spongiolites</i> .....                                         | 203                | <i>davidsoni</i> .....                                        | 152                  |
| <i>Spongolithis acicularis</i> .....                              | 229                | <i>deformis</i> .....                                         | 64, 81               |
| <i>aspera</i> .....                                               | 229                | <i>elongata var curta</i> .....                               | 57                   |
| <i>fustis</i> .....                                               | 229                | <i>Stricklandinia salteri</i> .....                           | 152                  |
| <i>mesogonyla</i> .....                                           | 229                | <i>Strobilocystites</i> .....                                 | 136                  |
| <i>Stagnicola</i> .....                                           | 106                | <i>calvini</i> .....                                          | 138                  |
| <i>Stralagmium concentricum</i> .....                             | 220                | <i>Stromatopora</i> .....                                     | 154, 192             |
| <i>Stauroneis baileyi</i> .....                                   | 229                | <i>Strombus</i> .....                                         | 206                  |
| <i>semen</i> .....                                                | 229                | <i>pervetus</i> .....                                         | 208                  |
| <i>Stavelia</i> .....                                             | 98                 | <i>pustulifera</i> .....                                      | 156                  |
| <i>Steganoerinus</i> .....                                        | 40, 42, 59         | <i>Stromomena rhomboidalis</i> .....                          | 130                  |
| <i>araneolus</i> .....                                            | 42                 | <i>Strophalocia</i> .....                                     | 257                  |
| <i>pentagonus</i> .....                                           | 42, 59             | ( <i>Aulosteges</i> ) <i>guadalupensis</i> .....              | 257                  |
| <i>sculptus</i> .....                                             | 42                 | <i>Strophodonta</i> .....                                     | 148, 192, 235, 250   |
| <i>Stephanodiscus</i> — ? .....                                   | 203                | <i>arcuata</i> .....                                          | 192                  |
| <i>Stenaster</i> .....                                            | 78                 | <i>beckii</i> .....                                           | 36                   |
| <i>grandis</i> .....                                              | 69, 78             | <i>canace</i> .....                                           | 235                  |
| <i>Stenophora columnaris</i> .....                                | 52                 | <i>calvini</i> .....                                          | 192                  |
| <i>Stenotheca</i> .....                                           | 189                | <i>! costata</i> .....                                        | 250                  |
| <i>acadica</i> .....                                              | 198                | <i>demissa</i> .....                                          | 148, 192             |
| <i>elongata</i> .....                                             | 189                | <i>headleyana</i> .....                                       | 36                   |
| <i>Stramonita</i> .....                                           | 212, 214           | <i>inequitradiata</i> .....                                   | 192                  |
| <i>petrosa</i> .....                                              | 212, 214           | <i>iowensis</i> .....                                         | 250                  |
| <i>Straparollus</i> .... 25, 26, 30, 42, 44, 46, 74, 87, 195, 258 |                    | <i>parva</i> .....                                            | 250                  |
| — ? .....                                                         | 258                | <i>patersoni</i> .....                                        | 192                  |
| <i>Straparollus cornudanus</i> .....                              | 258                | <i>perplana</i> .....                                         | 192                  |
| ( <i>Euomphalus</i> ) <i>minnesotensis</i> .....                  | 250                | <i>punctulifera</i> .....                                     | 192                  |
| <i>pernodosus</i> .....                                           | 65, 87             | <i>Strophites grandæva</i> .....                              | 167                  |
| <i>rugosus</i> .....                                              | 74                 | <i>Strophomena</i> .... 56, 57, 58, 62, 78, 80, 128, 129, 130 |                      |
| <i>subquadratus</i> .....                                         | 65, 87             | 148, 190, 192, 234, 235, 246                                  |                      |
| <i>subrugosus</i> .....                                           | 87                 | <i>alternata</i> .....                                        | 148                  |
| <i>lens</i> .....                                                 | 42                 | <i>angulata?</i> .....                                        | 248                  |
| <i>newarkensis</i> .....                                          | 195                | <i>convexa</i> .....                                          | 247                  |
| <i>planidorsatus</i> .....                                        | 44                 | <i>deltoides</i> .....                                        | 248                  |
| <i>similis</i> .....                                              | 26, 44             | <i>flitexta</i> .....                                         | 130                  |
| <i>var. planus</i> .....                                          | 26, 44             | <i>Fontinalis</i> .....                                       | 196, 129             |
| <i>umbilicatus</i> .....                                          | 46                 | ( <i>Hemopronites</i> ) <i>orenistria</i> ....                | 89                   |
| <i>Streblopteria</i> .....                                        | 45, 196            | <i>flitexta</i> .....                                         | 78                   |
| <i>similis</i> .....                                              | 196                | <i>nutans</i> .....                                           | 78                   |
| <i>! tenuilineata</i> .....                                       | 45                 | <i>plano-convexa</i> .....                                    | 78                   |
| <i>Strophona</i> .....                                            | 212, 214           | <i>planumbona</i> .....                                       | 78                   |
| <i>pedroana</i> .....                                             | 212, 214           | <i>plicata</i> .....                                          | 78                   |
| <i>Strepsidura</i> .....                                          | 237                | <i>sinuata</i> .....                                          | 78                   |
| <i>conybearii</i> .....                                           | 222                | <i>sulcata</i> .....                                          | 78                   |
| <i>Streptacia</i> .....                                           | 86                 | <i>nemæa</i> .....                                            | 190, 234             |
| <i>whitfieldi</i> .....                                           | 67, 86             | <i>nasuta?</i> .....                                          | 248                  |
| <i>Streptelasma</i> .....                                         | 155                | <i>planumbona</i> .....                                       | 148                  |
| <i>corniculum</i> .....                                           | 155                | <i>rhomboidalis</i> .....                                     | 36, 58, 78, 192, 235 |
| <i>Streptorhynchus</i> .. 116, 119, 177, 190, 192, 235, 245, 257  |                    | <i>sericea?</i> .....                                         | 248                  |
| <i>chemungensis</i> .....                                         | 192                | ( <i>Strophodonta</i> ) .....                                 | 58                   |
| <i>equivalvis</i> .....                                           | 235                | <i>cavumbona</i> .....                                        | 57                   |
| <i>inflatus</i> .....                                             | 116, 235           | <i>demissa</i> .....                                          | 62                   |



[illegible]

|                                             | Page.                                    |                                                                    | Page.                           |
|---------------------------------------------|------------------------------------------|--------------------------------------------------------------------|---------------------------------|
| <i>Tellina occidentalis</i> .....           | 243                                      | <i>Terebratulidæ</i> .....                                         | 30, 121, 122, 265               |
| <i>ocoyana</i> .....                        | 212, 214                                 | <i>Terebratulina</i> .....                                         | 265                             |
| (Eme?) <i>subscitula</i> .....              | 100                                      | <i>atlantica</i> .....                                             | 265                             |
| <i>pedro</i> .....                          | 211                                      | <i>floridana</i> .....                                             | 265                             |
| <i>pedroana</i> .....                       | 213                                      | <i>lachryma</i> .....                                              | 265                             |
| (Peronza?) <i>equilateralis</i> .....       | 100                                      | <i>Terebrispira</i> .....                                          | 103                             |
| <i>scitula</i> .....                        | 100                                      | <i>Teredidæ</i> .....                                              | 101, 270, 272                   |
| <i>plana</i> .....                          | 220                                      | <i>Teredo</i> .....                                                | 101, 270, 272                   |
| <i>prouti</i> .....                         | 15                                       | <i>emacrerata</i> .....                                            | 273                             |
| <i>scitula</i> .....                        | 15                                       | <i>globosa</i> .....                                               | 18, 101                         |
| <i>subelliptica</i> .....                   | 15                                       | <i>irregularis</i> .....                                           | 270                             |
| <i>subscitula</i> .....                     | 70                                       | <i>scelliformis</i> .....                                          | 21, 101                         |
| <i>subtortuosa</i> .....                    | 16                                       | <i>substriata</i> .....                                            | 204                             |
| <i>syriaca</i> .....                        | 207, 209                                 | <i>tibialis</i> .....                                              | 270                             |
| <i>Tellinella</i> .....                     | 100                                      | <i>Tessarolax</i> .....                                            | 158                             |
| <i>Tellinidæ</i> .....                      | 100, 111, 269                            | <i>hissii</i> .....                                                | 158                             |
| <i>Tellinidæ</i> .....                      | 100                                      | <i>Testacea</i> .....                                              | 24                              |
| <i>Tellinomya</i> .....                     | 55, 79, 190                              | <i>Tetrabranchiata</i> .....                                       | 33, 35, 103, 122, 125, 263, 265 |
| <i>alta</i> .....                           | 55                                       | <i>Tetradecapoda</i> .....                                         | 36, 46, 61, 90                  |
| <i>contracta</i> .....                      | 190                                      | <i>Teuthidæ</i> .....                                              | 105                             |
| ? <i>hamburgensis</i> .....                 | 190                                      | <i>Textularia phylloides</i> .....                                 | 47                              |
| ? <i>obliqua</i> .....                      | 79                                       | <i>Thaleops</i> ? .....                                            | 248                             |
| <i>protensa</i> .....                       | 232                                      | <i>Thallogenæ</i> .....                                            | 128                             |
| <i>ventricosa</i> .....                     | 55                                       | <i>Thaumastus</i> .....                                            | 104, 161                        |
| <i>Tellinula</i> .....                      | 100                                      | <i>limnæformis</i> .....                                           | 104, 161, 169                   |
| <i>Tenacochilus</i> .....                   | 65, 104                                  | <i>Theca</i> .....                                                 | 28, 31                          |
| <i>Tenax</i> .....                          | 269                                      | <i>gregaria</i> .....                                              | 31                              |
| <i>punguis</i> .....                        | 269                                      | <i>lancoolata</i> .....                                            | 238                             |
| <i>Tentaculites</i> .....                   | 39, 56, 138, 195                         | (Pugilunculus) <i>gregaria</i> .....                               | 238                             |
| <i>attenuatus</i> .....                     | 195                                      | <i>Thecia ramosa</i> .....                                         | 192                             |
| <i>bellulus</i> .....                       | 195                                      | <i>Thecosmata</i> .....                                            | 31                              |
| <i>gracilistriatus</i> .....                | 195                                      | <i>Thetis</i> .....                                                | 100, 264                        |
| <i>hoyti</i> .....                          | 138                                      | ? <i>circularis</i> .....                                          | 100, 264                        |
| <i>oswegoensis</i> .....                    | 39, 56                                   | <i>Thracia</i> 34, 92, 100, 151, 158, 215, 216, 250, 261, 262, 264 |                                 |
| <i>scalariformis</i> .....                  | 195                                      | ? <i>arcuata</i> .....                                             | 21, 34                          |
| <i>sterlingensis</i> .....                  | 39, 56                                   | (Corimya) <i>grinnelli</i> .....                                   | 259                             |
| <i>tenuistriatus</i> .....                  | 39, 56                                   | <i>gracilis</i> .....                                              | 100                             |
| <i>Tenella</i> .....                        | 237                                      | <i>mactropis</i> .....                                             | 215, 216                        |
| <i>pilulifera</i> .....                     | 237                                      | <i>myæformis</i> .....                                             | 151, 156                        |
| <i>Tenellatella</i> .....                   | 265                                      | ? <i>occidentalis</i> .....                                        | 17, 21                          |
| <i>plicata</i> .....                        | 265                                      | ? <i>prouti</i> .....                                              | 101                             |
| <i>vanuxemi</i> .....                       | 265                                      | <i>subgracilis</i> .....                                           | 261, 264                        |
| <i>Tenellatula</i> .....                    | 80, 73, 83, 130, 132, 146, 154, 162, 178 | ? <i>sublevia</i> .....                                            | 21, 34, 25                      |
| 104, 209, 218, 233, 235, 236, 257, 259, 265 |                                          | ? <i>subtortuosa</i> .....                                         | 100                             |
| — ? .....                                   | 30, 206, 225                             | <i>subtruncata</i> .....                                           | 17, 92                          |
| <i>amygdala</i> .....                       | 233, 225                                 | <i>trapezoides</i> .....                                           | 265                             |
| <i>angusta</i> .....                        | 146, 162, 236                            | <i>Thyatira</i> (!) <i>hisecta</i> .....                           | 50                              |
| <i>bovina</i> .....                         | 85                                       | <i>Tiara humerosa</i> .....                                        | 221                             |
| <i>bovidens</i> .....                       | 73, 178                                  | <i>Tinoporus</i> (Orbitolina) <i>texanus</i> .....                 | 47                              |
| <i>hurlingtonensis</i> .....                | 116                                      | <i>Tornatella elliptica</i> .....                                  | 50                              |
| <i>clonotawepais</i> .....                  | 218, 253                                 | <i>Tornatella impressa</i> .....                                   | 220                             |
| (Disclanema) <i>bovidens</i> .....          | 132                                      | <i>Toxaster elegans</i> .....                                      | 223                             |
| <i>hurlingtonensis</i> .....                | 130                                      | <i>texanus</i> .....                                               | 223                             |
| <i>elongata</i> .....                       | 233, 225, 257                            | <i>Toxoglossa</i> .....                                            | 134                             |
| <i>firmosa</i> .....                        | 154                                      |                                                                    |                                 |
| <i>hastata</i> .....                        | 265                                      |                                                                    |                                 |
| <i>hastata</i> .....                        | 196                                      |                                                                    |                                 |
| <i>helena</i> .....                         | 259                                      |                                                                    |                                 |
| <i>hurlingtonensis</i> .....                | 269                                      |                                                                    |                                 |
| <i>hurlingtonensis</i> .....                | 236                                      |                                                                    |                                 |
| <i>hurlingtonensis</i> .....                | 222                                      |                                                                    |                                 |
| <i>hurlingtonensis</i> .....                | 230                                      |                                                                    |                                 |
| <i>hurlingtonensis</i> .....                | 253                                      |                                                                    |                                 |
| <i>hurlingtonensis</i> .....                | 233                                      |                                                                    |                                 |
| <i>hurlingtonensis</i> .....                | 30, 233                                  |                                                                    |                                 |

|                          | Page.                                         |                                    | Page.         |
|--------------------------|-----------------------------------------------|------------------------------------|---------------|
| Trachycardium .....      | 99                                            | Tritonidae .....                   | 102           |
| Trachyceras .....        | 110, 239                                      | Tritonidea .....                   | 103           |
| judicarium .....         | 110, 239                                      | Tritonifusus migrans .....         | 50            |
| var. subasperum .....    | 110                                           | tenuilineatus .....                | 49            |
| whitneyi .....           | 110, 239                                      | Tritonium diegoensis .....         | 222           |
| Trachyceratidae .....    | 110, 239                                      | Trochactaeon .....                 | 29            |
| Trachydomia .....        | 46                                            | Trochactaeonina .....              | 29            |
| Trachytriton .....       | 49, 103                                       | Trochidae .....                    | 102, 180, 264 |
| vinculum .....           | 49, 102                                       | Trochita .....                     | 212, 214, 217 |
| Trapezium .....          | 260, 262                                      | antiqua .....                      | 67            |
| bellefourchensis .....   | 260, 262                                      | carbonaria .....                   | 40            |
| micronema .....          | 76, 143                                       | costellata .....                   | 217           |
| subequalis .....         | 260, 262                                      | diegoana .....                     | 212, 214      |
| truncatum .....          | 143                                           | trochiformis .....                 | 221           |
| Trematis .....           | 126, 129                                      | Trochoceras .....                  | 39, 79        |
| pannulus .....           | 126, 129                                      | baeri .....                        | 39, 79        |
| Trematocrinus .....      | 23, 42                                        | Trochonema .....                   | 55, 80        |
| fascellus .....          | 23                                            | tricarinata .....                  | 67, 80        |
| Trematodiscus .....      | 27, 42, 104                                   | umbilicata .....                   | 55            |
| Trematoceps .....        | 57, 193                                       | Trochus .....                      | 180           |
| ? imbricata .....        | 57                                            | lenticularis ? .....               | 248           |
| infrequens .....         | 193                                           | (Oxyatele) euryostomus .....       | 180           |
| Triarthrus becki .....   | 187                                           | Tropidina .....                    | 35, 107       |
| Trichopteris .....       | 231                                           | Tropidiscus .....                  | 106           |
| filamentosa .....        | 231                                           | Tropidocardium .....               | 99            |
| gracilis .....           | 231                                           | Tropidoleptus .....                | 58            |
| Trigonarca .....         | 98, 267                                       | carinatus .....                    | 58            |
| (Breviarca) exigua ..... | 98                                            | Tuba ? bella .....                 | 48            |
| ? salinensis .....       | 98                                            | Tubicola .....                     | 35, 105, 135  |
| ? siouxensis .....       | 98                                            | Tubipora lamellosa .....           | 247           |
| cuneiformis .....        | 267                                           | Tubulostium dickhauti .....        | 157           |
| transversa .....         | 267                                           | Tudicola ? dakotensis .....        | 49            |
| Trigona .....            | 34                                            | (Pyropsis) bairdi .....            | 49            |
| Trigoniella .....        | 100                                           | Tulotoma .....                     | 138, 162      |
| Trigonellites .....      | 35                                            | thompsoni .....                    | 138, 162, 169 |
| Trigonia .....           | 30, 33, 92, 133, 164, 207, 209, 218, 236, 268 | Turbinolia .....                   | 218           |
| alta .....               | 207                                           | goldfussii .....                   | 220           |
| americana .....          | 164                                           | stokesii .....                     | 220           |
| cerulea .....            | 268                                           | texana .....                       | 218           |
| conradi .....            | 22, 23                                        | Turbo .....                        | 227, 258      |
| orenlata .....           | 235                                           | glabra .....                       | 50            |
| cuneiformis .....        | 207                                           | guadalupensis .....                | 258           |
| distant .....            | 210                                           | helicinus ? .....                  | 258           |
| emoryi .....             | 218                                           | lineatus .....                     | 221           |
| eufaulensis .....        | 268                                           | mudgeanus .....                    | 70            |
| evansana .....           | 17                                            | nebrascensis .....                 | 14            |
| evansi .....             | 92                                            | paludineformis .....               | 231           |
| lorentii .....           | 227                                           | tenuilineata .....                 | 48            |
| montanaensis .....       | 164                                           | tenuilineatus .....                | 14            |
| mortoni .....            | 268                                           | texanus .....                      | 258           |
| pandicosta .....         | 30                                            | Turbonilla .....                   | 134, 143      |
| quadrangularis .....     | 236                                           | (Chemnitzia ?) coalvillensis ..... | 77, 143       |
| texana .....             | 218                                           | melanopsis .....                   | 134           |
| syriaca .....            | 207, 209                                      | maclurii .....                     | 220           |
| Trigonidae .....         | 30, 32, 33, 111, 132, 133, 268                | Turnus .....                       | 101, 137      |
| Trigonotreta .....       | 31, 57, 58, 89                                | (Goniochasma) stimpsoni .....      | 101           |
| Trilobita .....          | 31, 39, 90, 179, 260, 261                     | sphenoidicus .....                 | 137           |
| Trilobites .....         | 28, 148, 149, 249                             | (Xylophagella) elegantulus .....   | 101           |
| Trimerella .....         | 80                                            | Turricula .....                    | 103           |
| grandis .....            | 80                                            | Turrillites .....                  | 49            |
| ohioensis .....          | 80                                            | cheyennensis .....                 | 49            |
| Triplexia .....          | 80, 190                                       | (Helicoceras) cochleatus .....     | 18            |
| calcifera .....          | 190                                           | ? umbilicatus .....                |               |
| ortoni .....             | 80                                            | Turris .....                       |               |
| Triton .....             | 216                                           | minor .....                        |               |

|                                                           | Page.                                                             |
|-----------------------------------------------------------|-------------------------------------------------------------------|
| <i>Turris</i> ( <i>Surcula</i> ) † <i>contortus</i> ..... | 103                                                               |
| <i>hitzia</i> .....                                       | 103                                                               |
| <i>texana</i> .....                                       | 49                                                                |
| <i>Turritella</i> .....                                   | 46, 134, 143, 158, 208, 210, 211, 212,<br>213, 214, 216, 217, 219 |
| ( <i>Aclis</i> )? <i>miconema</i> .....                   | 76, 143                                                           |
| <i>altiflra</i> .....                                     | 216                                                               |
| <i>bilineata</i> .....                                    | 231                                                               |
| <i>coalvillensis</i> .....                                | 76, 143                                                           |
| <i>convexa</i> .....                                      | 14                                                                |
| <i>gatunensis</i> .....                                   | 216                                                               |
| <i>inezana</i> .....                                      | 217                                                               |
| <i>irrorata</i> .....                                     | 214                                                               |
| <i>kansasensis</i> .....                                  | 70                                                                |
| <i>leoneensis</i> .....                                   | 220                                                               |
| <i>magnicostrata</i> .....                                | 208                                                               |
| <i>marnochi</i> .....                                     | 143                                                               |
| <i>moreauensis</i> .....                                  | 14                                                                |
| <i>multilineata</i> .....                                 | 236                                                               |
| <i>oceyana</i> .....                                      | 212, 214                                                          |
| <i>peralveata</i> .....                                   | 208                                                               |
| <i>planilabris</i> .....                                  | 219                                                               |
| <i>spironema</i> .....                                    | 76, 158                                                           |
| <i>stevensiana</i> .....                                  | 46                                                                |
| <i>striata</i> .....                                      | 221                                                               |
| <i>striata</i> .....                                      | 208, 210                                                          |
| <i>uvanada</i> .....                                      | 134, 211, 213                                                     |
| <i>variata</i> .....                                      | 217                                                               |
| <i>Turritellidae</i> .....                                | 102, 104, 134, 135                                                |
| <i>Tylostoma</i> .....                                    | 153                                                               |
| <i>princeps</i> .....                                     | 153                                                               |

## U.

|                                                               |                   |
|---------------------------------------------------------------|-------------------|
| Urticariaeae                                                  | 93                |
| socialis                                                      | 93                |
| Umbonium nana                                                 | 221               |
| Umbrella pinnulata                                            | 222               |
| Uncardium                                                     | 30                |
| gibbosum                                                      | 30                |
| Utna 34, 83, 103, 112, 123, 134, 137, 140, 150, 160, 168, 172 |                   |
| alutacea                                                      | 172               |
| aluticola                                                     | 140, 160, 168     |
| (Raphia ?) nebrascensis                                       | 70                |
| belliplicata                                                  | 93, 112, 160, 168 |
| brachyopisthus                                                | 137, 160, 168     |
| carinoides                                                    | 222               |
| clinopisthus                                                  | 103, 170          |
| condoni                                                       | 150               |
| convexa                                                       | 130, 160, 168     |
| crithmenoides                                                 | 222, 167          |
| oxyprotychus                                                  | 130, 160, 168     |
| dental                                                        | 13, 163, 160, 168 |
| downyana                                                      | 13, 163, 160, 168 |
| edulis                                                        | 130, 160, 168     |
| gallinacea                                                    | 222               |
| goniathebonata                                                | 140, 160, 168     |
| gonioides                                                     | 137, 160, 168     |
| huxleyi                                                       | 93, 83, 112, 170  |
| holmesiana                                                    | 130, 160, 168     |
| hubbardi                                                      | 167               |
| humilisoides                                                  | 172               |
| loca                                                          | 172               |
| lucina                                                        | 70                |
| luculentimolles                                               | 172               |
| maclurei                                                      | 172               |

|                      | Page                           |
|----------------------|--------------------------------|
| Unio meeki.....      | 139, 159, 170                  |
| mendax.....          | 139, 168                       |
| nasutoides.....      | 272                            |
| nuoalis.....         | 18, 34, 167                    |
| penultimus.....      | 167                            |
| petrinus.....        | 137                            |
| praenodontoides..... | 279                            |
| primævus.....        | 139, 160, 168                  |
| priscus.....         | 15, 105, 160, 168              |
| proævitus.....       | 139, 160, 168                  |
| propheticus.....     | 137, 160, 168                  |
| radiatoides.....     | 272                            |
| rectoides.....       | 279                            |
| roanokoides.....     | 272                            |
| senectus.....        | 139, 160, 168                  |
| shoshonensis.....    | 137, 159, 170                  |
| stewardi.....        | 136, 167                       |
| subrotundoides.....  | 272                            |
| subepatulatus.....   | 18, 105, 160, 168              |
| tellinoides.....     | 170                            |
| terra-rubra.....     | 88                             |
| vetustus.....        | 92, 95, 112, 125, 160, 168     |
| washakiensis.....    | 70, 159, 170                   |
| Unionidae.....       | 34, 96, 105, 112, 125, 139, 27 |
| Unionopsis.....      | 99                             |
| Uperoncrinus.....    | 41                             |
| Urosthemes.....      | 224                            |
| australis.....       | 224                            |

**V.**

|                                                     |                                   |
|-----------------------------------------------------|-----------------------------------|
| <i>Valvata</i> .....                                | 86, 107, 158, 162                 |
| <i>f. montanaensis</i> .....                        | 107, 162, 169                     |
| <i>nana</i> .....                                   | 77, 158, 167                      |
| <i>parvula</i> .....                                | 16, 107, 162                      |
| <i>scabrida</i> .....                               | 167                               |
| <i>subumbilicata</i> .....                          | 107, 162, 169                     |
| <i>?(Tropidina) scabrida</i> .....                  | 35                                |
| <i>Valvatidae</i> .....                             | 33, 107                           |
| <i>Vanikora</i> .....                               | 102, 264                          |
| <i>ambigua</i> .....                                | 48, 102, 264                      |
| <i>dissepens</i> .....                              | 50, 221                           |
| <i>Vanikoridae</i> .....                            | 102                               |
| <i>Vanikoreopsis</i> .....                          | 102, 259                          |
| <i>tasmaniana</i> .....                             | 102, 259                          |
| <i>Vanuremia</i> .....                              | 54                                |
| <i>dissepens</i> .....                              | 41                                |
| <i>?(dissepens)</i> .....                           | 54                                |
| <i>Velatella</i> .....                              | 124, 141, 158, 161                |
| <i>Velada</i> .....                                 | 269, 271                          |
| <i>equilatera</i> .....                             | 271                               |
| <i>limba</i> .....                                  | 269                               |
| <i>secuta</i> .....                                 | 271                               |
| <i>retinoides</i> .....                             | 269                               |
| <i>transversa</i> .....                             | 269                               |
| <i>Velutina</i> .....                               | 90, 125, 137, 160                 |
| <i>Venericardia (Cardiacardites) carinata</i> ..... | 50                                |
| <i>monilicasta</i> .....                            | 50                                |
| <i>subtenta</i> .....                               | 50                                |
| <i>occidentalis</i> .....                           | 50                                |
| <i>Pteromeris abbreviata</i> .....                  | 50                                |
| <i>radiata</i> .....                                | 50                                |
| <i>Veneroidae</i> .....                             | 100, 111, 260, 262, 264, 268, 271 |
| <i>Ventrida</i> .....                               | 60, 124, 264, 268, 271            |
| <i>convexa</i> .....                                | 90, 268                           |
| <i>decussa</i> .....                                | 268                               |



|                                                          | Page.                            |                                                  | Page.                                |
|----------------------------------------------------------|----------------------------------|--------------------------------------------------|--------------------------------------|
| <i>Veniella elevata</i> .....                            | 269                              | <i>Viviparus leidyi</i> .....                    | 107, 162, 169                        |
| <i>goniophora</i> .....                                  | <b>99</b> , 134                  | var. <i>formosus</i> .....                       | 107, 169                             |
| <i>humilis</i> .....                                     | 264                              | <i>paludinaformis</i> .....                      | 170                                  |
| <i>inflata</i> .....                                     | 269                              | <i>panguit-chensis</i> .....                     | <b>137</b> , 169                     |
| <i>mortoni</i> .....                                     | 99                               | <i>peculiaris</i> .....                          | 107, 162, 169                        |
| <i>rhomboidea</i> .....                                  | 271                              | <i>plicapressus</i> .....                        | <b>138</b> , 162, 169                |
| <i>subovalis</i> .....                                   | 268                              | <i>prudentius</i> .....                          | 162, 169                             |
| <i>subtumida</i> .....                                   | 99                               | <i>prudentia</i> .....                           | 141                                  |
| <i>trapezoidea</i> .....                                 | 269                              | <i>retusana</i> .....                            | 107, 162, 169                        |
| <i>trigona</i> .....                                     | 269                              | <i>reynoldsana</i> .....                         | <b>28</b>                            |
| ( <i>Venilicardia</i> ?) <i>humilis</i> .....            | <b>99</b>                        | <i>reynoldsianus</i> .....                       | 107, 162, 169                        |
| <i>Veniellidae</i> .....                                 | 264                              | <i>trochiformis</i> .....                        | 107, 135, 162, 169                   |
| <i>Venilia</i> .....                                     | 29, 99                           | var.....                                         | 135                                  |
| <i>gabbana</i> .....                                     | 47                               | <i>wyomingensis</i> .....                        | <b>68</b> , 170                      |
| <i>humilis</i> .....                                     | 47                               | <i>Volzella</i> .....                            | 33, 98, 111, 140, 158, 160, 164, 262 |
| <i>laphami</i> .....                                     | 48                               | <i>attenuata</i> .....                           | 47, 98                               |
| <i>mortoni</i> .....                                     | <b>29</b>                        | ( <i>Brachydontes</i> ) <i>laticostata</i> ..... | <b>140</b> , 160, 168                |
| <i>quadrata</i> .....                                    | 47                               | <i>multilinigera</i> .....                       | 158                                  |
| <i>subtumida</i> .....                                   | 48                               | <i>regularis</i> .....                           | <b>140</b> , 160, 168                |
| <i>Venilicardia</i> .....                                | 99                               | <i>concentrico-costellata</i> .....              | 47                                   |
| <i>Venus</i> .....                                       | 207, 208, 217                    | <i>conradi</i> .....                             | 49                                   |
| — f.....                                                 | 206                              | <i>contracta</i> .....                           | 50                                   |
| <i>alveata</i> .....                                     | 50                               | <i>cretacea</i> .....                            | 47                                   |
| <i>althleta</i> .....                                    | 50                               | <i>ducatelli</i> .....                           | 50                                   |
| <i>angustifrons</i> .....                                | 50, <b>206</b>                   | <i>formosa</i> .....                             | 33, 49                               |
| <i>bisecta</i> .....                                     | 50, <b>206</b>                   | <i>galpiniana</i> .....                          | 98                                   |
| <i>brevilineata</i> .....                                | 50, 206                          | <i>inflata</i> .....                             | 50                                   |
| f <i>circularis</i> .....                                | <b>16</b> , 48                   | <i>julius</i> .....                              | 47                                   |
| <i>floridana</i> .....                                   | 220                              | <i>meekii</i> .....                              | 47, 98                               |
| <i>indurata</i> .....                                    | <b>207</b>                       | ( <i>Modiola</i> ) <i>formosa</i> .....          | 262                                  |
| <i>latilirata</i> .....                                  | 50                               | ( <i>Modiolina</i> ) <i>platynota</i> .....      | <b>164</b>                           |
| <i>lamellifera</i> .....                                 | <b>206</b>                       | <i>pedernalis</i> .....                          | 47                                   |
| <i>meekiana</i> .....                                    | 48                               | <i>pertenuis</i> .....                           | 33, 49, 262                          |
| <i>ripleyana</i> .....                                   | 48                               | <i>saffordii</i> .....                           | 47                                   |
| <i>pajaroana</i> .....                                   | <b>217</b>                       | <i>scalprum</i> var. <i>isonema</i> .....        | 111                                  |
| <i>penita</i> .....                                      | 220                              | [?] <i>spinigera</i> .....                       | 50                                   |
| <i>perovallis</i> .....                                  | <b>208</b>                       | <i>subimbricata</i> .....                        | 164                                  |
| <i>securis</i> .....                                     | <b>256</b>                       | <i>Volutilithes</i> .....                        | 211, 219                             |
| ( <i>Trigonia</i> ) <i>tantilla</i> .....                | 50                               | <i>Voluta</i> ( <i>l</i> ) <i>ithes</i> .....    | 213                                  |
| <i>unionides</i> .....                                   | 49                               | <i>californiana</i> .....                        | <b>211</b> , 213                     |
| <i>vespertina</i> .....                                  | <b>219</b>                       | <i>sayana</i> .....                              | 219                                  |
| <i>syriaca</i> .....                                     | <b>207</b>                       | <i>Volutilithes bella</i> .....                  | 48                                   |
| <i>Vermetes</i> .....                                    | 135, 138, 144, 153, 165          | <i>biplicata</i> .....                           | 49                                   |
| <i>Vermetus rotula</i> .....                             | 49                               | <i>nasuto</i> .....                              | 49                                   |
| <i>Vestigia</i> .....                                    | 129                              | <i>Volviceramus</i> .....                        | 97                                   |
| <i>Vetelletia</i> ( <i>Ancylus</i> ) <i>minuta</i> ..... | <b>16</b>                        | <i>Vorticifex</i> .....                          | 112                                  |
| <i>Vetericardia</i> .....                                | 268                              |                                                  |                                      |
| <i>crenulirata</i> .....                                 | 268                              | W.....                                           |                                      |
| <i>octolirata</i> .....                                  | 268                              | <i>Waldheimia</i> .....                          | 121                                  |
| <i>Vitrina</i> .....                                     | 106, 161                         | <i>compacta</i> .....                            | <b>120</b> , 121                     |
| <i>obliqua</i> .....                                     | <b>17</b> , 169                  | <i>Webeteria</i> .....                           | 96                                   |
| f <i>obliqua</i> .....                                   | 106, 161                         | <i>cretacea</i> .....                            | 96                                   |
| <i>Vitrinidae</i> .....                                  | 106, 107                         | <i>Whitfieldia</i> .....                         | 193                                  |
| <i>Vivipara</i> .....                                    | 28                               |                                                  |                                      |
| <i>Viviparidae</i> .....                                 | 35, 107, 112, 135                | X.....                                           |                                      |
| <i>Viviparus</i> .....                                   | 35, 107, 112, 135, 137, 141, 162 | <i>Xenophora</i> .....                           | 84                                   |
| — f.....                                                 | 136                              | ( <i>Pseudophorus</i> ) <i>antiqua</i> .....     | 80                                   |
| <i>conradi</i> .....                                     | 107, 112, 162, 169               | <i>Xiphosura</i> .....                           | 46                                   |
| <i>covesi</i> .....                                      | <b>141</b> , 162, 168            | <i>Xylophaga elegantula</i> .....                | <b>18</b> , 48                       |
| <i>gilli</i> .....                                       | 35                               | <i>stimpsoni</i> .....                           | 18, 48                               |
| <i>gilliansi</i> .....                                   | 167                              | <i>Xylophagella</i> .....                        | 48, 101                              |
| <i>glaber</i> .....                                      | 50                               | <i>elegantula</i> .....                          | 48                                   |
| <i>ionicus</i> .....                                     | <b>136</b> , 170                 | <i>Xyphosura</i> .....                           | 36                                   |
| <i>leai</i> .....                                        | 107, 162, 169                    | <i>Xystracanthus arcuatus</i> .....              | 20                                   |

| Y.                                    | Page.                            |                                    | Page.                               |
|---------------------------------------|----------------------------------|------------------------------------|-------------------------------------|
| <i>Yoldia</i> .....                   | 33, 44, 73, 90, 98, 263          | <i>Zaphrentis priscus</i> .....    | 167                                 |
| <i>evanai</i> .....                   | 98, 263                          | <i>rafinesquii</i> .....           | 155                                 |
| <i>impressa</i> .....                 | 49                               | <i>recta</i> .....                 | 69                                  |
| <i>levistriata</i> .....              | 44                               | <i>spinulifera</i> .....           | 125                                 |
| <i>microdonta</i> .....               | 70, 98                           | <i>stansburyi</i> .....            | 109, 232, 243                       |
| (Paleoneio ?) <i>carbonaria</i> ..... | 69, 90                           | <i>Zaptychius</i> .....            | 188, 197                            |
| <i>scitula</i> .....                  | 98                               | <i>carbonaria</i> .....            | 180, 188, 197                       |
| <i>stevensoni</i> .....               | 69, 90                           | <i>Zeacrinus</i> .....             | 23, 42, 43, 45, 72, 82, 84, 85, 118 |
| <i>subscitula</i> .....               | 33, 73                           | ? <i>armiger</i> .....             | 64                                  |
| <i>ventricosa</i> .....               | 98                               | <i>crassus</i> .....               | 45                                  |
|                                       |                                  | <i>discus</i> .....                | 23, 45                              |
|                                       |                                  | (Hyreionocrinus ?) <i>acantho-</i> |                                     |
|                                       |                                  | <i>porus</i> .....                 | 64, 87                              |
|                                       |                                  | ? <i>microspinus</i> .....         | 72                                  |
| <i>Zamites occidentalis</i> .....     | 246                              | <i>perangulatus</i> .....          | 118                                 |
| <i>Zaphrentis</i> .....               | 58, 62, 109, 117, 119, 130, 131, | <i>planobrachistatus</i> .....     | 23, 43                              |
|                                       | 148, 155, 165, 177               | <i>saeculus</i> .....              | 118                                 |
| — ? .....                             | 58, 130                          | <i>var. concinnus</i> .....        | 118                                 |
| <i>acutus</i> .....                   | 117                              | <i>troostanus</i> .....            | 23, 62                              |
| <i>calceola</i> .....                 | 165                              | <i>Zellinidae</i> .....            | 261                                 |
| <i>cylindrica</i> .....               | 243                              | <i>Ziphosura</i> .....             | 61                                  |
| <i>elliptica</i> .....                | 119, 165                         | <i>Zoophyta</i> .....              | 55, 56, 57, 58, 119, 257            |
| <i>excentrica</i> .....               | 109, 131                         | <i>Zygospira</i> .....             | 57, 78                              |
| <i>gibsoni</i> .....                  | 177                              | <i>cincinnatiensis</i> .....       | 78                                  |
| <i>glans</i> .....                    | 119                              | <i>headi</i> .....                 | 79                                  |
| <i>hayati</i> .....                   | 36                               | <i>modesta</i> .....               | 78                                  |
| <i>mcfarlandi</i> .....               | 69                               | <i>subconca</i> .....              | 87                                  |
| ? <i>multilamella</i> .....           | 109, 232                         |                                    |                                     |

# GENERAL INDEX.

| A.                              |       | Page.                                         |                                    |       | Page.                                                                                                                               |
|---------------------------------|-------|-----------------------------------------------|------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------|
| Abert, J. W.                    | ..... | 273                                           | Birds of Iowa                      | ..... | 128                                                                                                                                 |
| Africa                          | ..... | 156                                           | Bismarck                           | ..... | 176                                                                                                                                 |
| Agua doce molluscos cretaceos   | ..... | 181                                           | Bitter Creek                       | ..... | 145                                                                                                                                 |
| Alabama                         | ..... | 17, 96                                        | fossils                            | ..... | 77                                                                                                                                  |
| Alaska fossils                  | ..... | 176                                           | group                              | ..... | 141                                                                                                                                 |
| Albino flowers                  | ..... | 124                                           | Black Buttes, Wyoming              | ..... | 145                                                                                                                                 |
| Albuquerque                     | ..... | 241                                           | Black Hills                        | ..... | 18, 157, 261                                                                                                                        |
| Allen, J. A.                    | ..... | 123                                           | fossils                            | ..... | 259                                                                                                                                 |
| Alluvium                        | ..... | 74, 75                                        | Black River fossils                | ..... | 231                                                                                                                                 |
| America (North)                 | ..... | 49, 139, 141, 147, 166, 167,<br>179, 198, 242 | Black slate                        | ..... | 25                                                                                                                                  |
| America (Northwestern)          | ..... | 144, 180                                      | Blake, W. P.                       | ..... | 210, 242                                                                                                                            |
| fossils of                      | ..... | 217                                           | Blood, circulation of              | ..... | 140                                                                                                                                 |
| Amérique                        | ..... | 125                                           | Braintree argillites fauna         | ..... | 199                                                                                                                                 |
| Andes fossil ammonite           | ..... | 227                                           | Branchial appendages of Trilobites | ..... | 185                                                                                                                                 |
| Archimedes limestone            | ..... | 75                                            | Brazil                             | ..... | 181                                                                                                                                 |
| Arizona                         | ..... | 128, 146, 187, 188, 241, 244                  | Brazilian National Museum          | ..... | 181                                                                                                                                 |
| Arkansas                        | ..... | 153, 157, 241, 242                            | Bridger group                      | ..... | 145                                                                                                                                 |
| River                           | ..... | 241, 242                                      | British America                    | ..... | 171                                                                                                                                 |
| Artesian wells                  | ..... | 156, 157, 256, 257, 274                       | North America                      | ..... | 147                                                                                                                                 |
| Arthur, Mr.                     | ..... | 146                                           | British Provinces                  | ..... | 242                                                                                                                                 |
| Ashley's Fork, Utah             | ..... | 145                                           | Brownville                         | ..... | 71                                                                                                                                  |
| Aspinwall                       | ..... | 71                                            | Bryan's Pass                       | ..... | 256                                                                                                                                 |
| Astoria fossils                 | ..... | 205                                           | Bull-snake, (Pityophis)            | ..... | 175                                                                                                                                 |
| Oregon                          | ..... | 205, 206                                      | Burlington                         | ..... | 116, 117                                                                                                                            |
| Atchison Landing                | ..... | 71                                            | beds                               | ..... | 116                                                                                                                                 |
| Atlantic supracretaceous        | ..... | 205                                           | group fossils                      | ..... | 42, 59, 81                                                                                                                          |
| Tertiary fossils                | ..... | 205                                           | C.                                 |       |                                                                                                                                     |
| Australia                       | ..... | 223, 224                                      | Cache à la poudre                  | ..... | 145                                                                                                                                 |
| Azoic                           | ..... | 123                                           | Calcareous fossils                 | ..... | 186, 231                                                                                                                            |
| B.                              |       |                                               | California                         | ..... | 29, 85, 152, 180, 241, 242, 244                                                                                                     |
| Bailey, J. W., writings of      | ..... | 203, 273                                      | desert                             | ..... | 244                                                                                                                                 |
| Bear Creek                      | ..... | 146                                           | fossils                            | ..... | 210, 212, 216                                                                                                                       |
| River                           | ..... | 76, 145                                       | (North)                            | ..... | 17, 231                                                                                                                             |
| fossils                         | ..... | 95, 112                                       | (Southern)                         | ..... | 244                                                                                                                                 |
| Laramie fossils                 | ..... | 168                                           | Tertiary fossils                   | ..... | 215                                                                                                                                 |
| Beckett's                       | ..... | 205                                           | Cambrian                           | ..... | 188                                                                                                                                 |
| Beckwith, E. S.                 | ..... | 203                                           | faunas                             | ..... | 198                                                                                                                                 |
| Bell County, Texas              | ..... | 146                                           | fossils                            | ..... | 189                                                                                                                                 |
| Bellevue                        | ..... | 71                                            | middle                             | ..... | 199                                                                                                                                 |
| Benner's fossil shells          | ..... | 205                                           | Trilobites                         | ..... | 199                                                                                                                                 |
| Bennett's mill                  | ..... | 71                                            | Camden clays                       | ..... | 265                                                                                                                                 |
| Berthoud, E. S.                 | ..... | 146                                           | company, New Jersey                | ..... | 272                                                                                                                                 |
| Bexar County, Texas             | ..... | 146                                           | Canada                             | ..... | 188                                                                                                                                 |
| Bibliography                    | ..... | 141, 147                                      | de las Uvas                        | ..... | 244                                                                                                                                 |
| Big Spring, Iowa                | ..... | 248                                           | (Geol. Surv.)                      | ..... | 179                                                                                                                                 |
| Bijou Creek, Colorado           | ..... | 145                                           | Canadian period                    | ..... | 126, 129                                                                                                                            |
| Biographic sketch of F. B. Meek | ..... | 11                                            | Cañon Park, Colorado               | ..... | 145                                                                                                                                 |
| Birds                           | ..... | 124                                           | Carboniferous                      | ..... | 13, 18, 21, 23, 31, 32, 35, 38, 41, 59, 63,<br>64, 69, 74, 75, 76, 81, 92, 108, 116, 123,<br>126, 127, 128, 130, 131, 136, 148, 150 |
| Bird's eye fossils              | ..... | 231                                           | crinoides                          | ..... | 54                                                                                                                                  |

|                                                   | Page.                                                                                                                                                      |                                                         | Page.                                                                                                                                                      |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Carboniferous fossils .....                       | 19, 22, 24, 29, 40, 59, 66,<br>70, 71, 92, 94, 109, 117,<br>118, 136, 144, 146, 147, 150,<br>151, 163, 164, 167, 175, 189,<br>196, 233, 241, 246, 255, 258 | Cretaceous fossils .....                                | 21, 22, 23, 27, 28, 66, 70, 71, 76, 92,<br>93, 95, 96, 111, 136, 142, 145, 147,<br>157, 158, 167, 180, 214, 218, 220,<br>222, 233, 243, 255, 256, 260, 263 |
| (lower) .....                                     | 147                                                                                                                                                        | invertebrates .....                                     | 181                                                                                                                                                        |
| fossils .....                                     | 81, 91, 116, 236, 243                                                                                                                                      | Iowa .....                                              | 139                                                                                                                                                        |
| Ostreidae .....                                   | 172                                                                                                                                                        | (lower) .....                                           | 19                                                                                                                                                         |
| shells .....                                      | 223                                                                                                                                                        | ostreidae .....                                         | 172                                                                                                                                                        |
| (upper) .....                                     | 147                                                                                                                                                        | Crow Creek, Colorado .....                              | 145                                                                                                                                                        |
| Carol, Montana .....                              | 256                                                                                                                                                        | Croxton, Mr. .....                                      | 71                                                                                                                                                         |
| Catalogue .....                                   | 210                                                                                                                                                        | Cyathophycna, nature of .....                           | 187                                                                                                                                                        |
| Cat, domestic instinct in .....                   | 175                                                                                                                                                        |                                                         |                                                                                                                                                            |
| Cedar Bluff .....                                 | 71                                                                                                                                                         | D.                                                      |                                                                                                                                                            |
| Cenozoic .....                                    | 135, 140, 153                                                                                                                                              | Dakota .....                                            | 123, 157, 176, 259, 261                                                                                                                                    |
| Unionidae .....                                   | 140                                                                                                                                                        | group .....                                             | 96, 120                                                                                                                                                    |
| Central Pacific Railroad line fossils .....       | 253                                                                                                                                                        | (Northwestern) .....                                    | 171                                                                                                                                                        |
| Cerebro spinal meningitis .....                   | 119                                                                                                                                                        | Dall, W. H. .....                                       | 176                                                                                                                                                        |
| Cephalopodes cretaceous .....                     | 181                                                                                                                                                        | Dana, J. D. .....                                       | 242                                                                                                                                                        |
| Chalk organic remains of .....                    | 208                                                                                                                                                        | writings of .....                                       | 223                                                                                                                                                        |
| Chazy fossils .....                               | 231                                                                                                                                                        | Danforth Hills, Colorado .....                          | 145                                                                                                                                                        |
| limestone fossils .....                           | 186                                                                                                                                                        | Dead Sea .....                                          | 206                                                                                                                                                        |
| Check list of fossils, Eocene and Oligocene ..... | 220                                                                                                                                                        | Deer Creek coal field .....                             | 188                                                                                                                                                        |
| Chemung .....                                     | 13, 116                                                                                                                                                    | Denison, Texas .....                                    | 146                                                                                                                                                        |
| Chester group fossils .....                       | 44, 84                                                                                                                                                     | Devonian .....                                          | 13, 28, 41, 54, 66, 77, 116, 123, 155, 174, 176                                                                                                            |
| Chippewa land district fossils .....              | 248                                                                                                                                                        | fossils .....                                           | 22, 57, 65, 94, 106, 118, 148, 167, 180,<br>192, 235                                                                                                       |
| Chestnut limestone .....                          | 75                                                                                                                                                         | Dodd's ranch, Utah .....                                | 145                                                                                                                                                        |
| Chutes River, Oregon .....                        | 229                                                                                                                                                        | Drift .....                                             | 75, 120, 122                                                                                                                                               |
| Cincinnati group .....                            | 37, 68, 69                                                                                                                                                 | (glacial) .....                                         | 171, 176                                                                                                                                                   |
| fossils .....                                     | 55, 77                                                                                                                                                     | Dry Creek (Mexico), Cretaceous fossils .....            | 218                                                                                                                                                        |
| Charbone .....                                    | 205                                                                                                                                                        | Dutton, C. E. .....                                     | 174                                                                                                                                                        |
| Clinton fossils .....                             | 89                                                                                                                                                         |                                                         |                                                                                                                                                            |
| group fossils .....                               | 232                                                                                                                                                        | E.                                                      |                                                                                                                                                            |
| Coal beds .....                                   | 273                                                                                                                                                        | Echinodermes cretaceous .....                           | 181                                                                                                                                                        |
| measures .....                                    | 17, 36, 50, 53, 61, 73, 88, 121, 149, 155                                                                                                                  | Echo Cañon .....                                        | 76                                                                                                                                                         |
| of Europe .....                                   | 136                                                                                                                                                        | Economic geology .....                                  | 75                                                                                                                                                         |
| fossils .....                                     | 45, 65, 94, 92, 121, 177, 235, 254                                                                                                                         | Economic geology of Montrose County Mis-<br>souri ..... | 13                                                                                                                                                         |
| (upper) .....                                     | 19                                                                                                                                                         | Ehrenberg, C. G., writings of .....                     | 229                                                                                                                                                        |
| United States .....                               | 126                                                                                                                                                        | El Paso .....                                           | 241, 242                                                                                                                                                   |
| Columbia, Utah .....                              | 76, 145                                                                                                                                                    | Cretaceous fossils .....                                | 218                                                                                                                                                        |
| Crook Range .....                                 | 264                                                                                                                                                        | Emery Major .....                                       | 214                                                                                                                                                        |
| Culture, John .....                               | 146, 154, 174, 177                                                                                                                                         | Essential limestone .....                               | 13, 75                                                                                                                                                     |
| Cabrado .....                                     | 136, 138, 141, 145, 146, 153, 157, 159, 264                                                                                                                | Engelmann, H. .....                                     | 256                                                                                                                                                        |
| River .....                                       | 136                                                                                                                                                        | Eocene fossils .....                                    | 176, 205, 210, 212, 220                                                                                                                                    |
| (Eastern) .....                                   | 136                                                                                                                                                        | of Southern States .....                                | 237                                                                                                                                                        |
| group .....                                       | 145                                                                                                                                                        | marks .....                                             | 265                                                                                                                                                        |
| Northwestern .....                                | 142                                                                                                                                                        | fossils .....                                           | 271                                                                                                                                                        |
| of the West .....                                 | 266                                                                                                                                                        | ostreids .....                                          | 237                                                                                                                                                        |
| Commencement of Agriculture .....                 | 136                                                                                                                                                        | Emu-Lins .....                                          | 241                                                                                                                                                        |
| Common methods .....                              | 136                                                                                                                                                        | Europe district, Paleontology of .....                  | 182                                                                                                                                                        |
| Conchifera vivipara .....                         | 152                                                                                                                                                        | Europe .....                                            | 141, 147                                                                                                                                                   |
| Cone in cone .....                                | 152                                                                                                                                                        | Evans, Colonel .....                                    | 88                                                                                                                                                         |
| Conrad P. & writings of .....                     | 205                                                                                                                                                        | Evans, John, and Sheward, R. F. .....                   | 255                                                                                                                                                        |
| Constrata, table of .....                         | 5                                                                                                                                                          |                                                         |                                                                                                                                                            |
| Cook, C. H. .....                                 | 262                                                                                                                                                        | F.                                                      |                                                                                                                                                            |
| Copper metals .....                               | 7                                                                                                                                                          | Fort Hayes section .....                                | 265                                                                                                                                                        |
| Copper N. E. .....                                | 136, 177, 207                                                                                                                                              | Fort Worth .....                                        | 136                                                                                                                                                        |
| Cretaceous fossils .....                          | 21                                                                                                                                                         | Fort House, New Jersey .....                            | 272                                                                                                                                                        |
| Cretaceous fossils .....                          | 21, 22, 23, 27, 28, 66, 70, 71, 76, 92,<br>93, 95, 96, 111, 136, 142, 145, 147,<br>157, 158, 167, 180, 214, 218, 220,<br>222, 233, 243, 255, 256, 260, 263 | Fort Wyandolph .....                                    | 119                                                                                                                                                        |
| invertebrates .....                               | 181                                                                                                                                                        | Fort Worth .....                                        | 142                                                                                                                                                        |
| Iowa .....                                        | 139                                                                                                                                                        | Fort Worth .....                                        | 108, 176                                                                                                                                                   |
| (lower) .....                                     | 19                                                                                                                                                         | Fort Worth group .....                                  | 96                                                                                                                                                         |
| ostreidae .....                                   | 172                                                                                                                                                        | Fort Worth .....                                        | 17                                                                                                                                                         |
| Crow Creek, Colorado .....                        | 145                                                                                                                                                        | Fort Worth, Colorado .....                              | 145                                                                                                                                                        |
| Croxton, Mr. .....                                | 71                                                                                                                                                         |                                                         |                                                                                                                                                            |
| Cyathophycna, nature of .....                     | 187                                                                                                                                                        |                                                         |                                                                                                                                                            |



|                                                              | Page.              |                                                          | Page.                                                                     |
|--------------------------------------------------------------|--------------------|----------------------------------------------------------|---------------------------------------------------------------------------|
| Fort Leavenworth .....                                       | 256                | Hall, James, writings of .....                           | 231                                                                       |
| Pierre group .....                                           | 96                 | and Meek, F. B. ....                                     | 13                                                                        |
| Riley .....                                                  | 256                | and Whitfield, R. P. ....                                | 233                                                                       |
| Smith .....                                                  | 241                | Hamilton group fossils .....                             | 58                                                                        |
| Snelling .....                                               | 248                | Harper's Hill, Australia .....                           | 223                                                                       |
| Tejon .....                                                  | 244                | Hartt, C. F. ....                                        | 181                                                                       |
| Union .....                                                  | 141                | collection .....                                         | 198                                                                       |
| group .....                                                  | 96                 | Hawn, F. ....                                            | 17                                                                        |
| Fortieth parallel, paleontology of .....                     | 108                | Hayden, F. V. ....                                       | 66, 71, 96                                                                |
| Fossil corals .....                                          | 223                | Hays, Dr. ....                                           | 86, 52                                                                    |
| leaves .....                                                 | 278                | Heilprin, A. ....                                        | 172                                                                       |
| mollusca .....                                               | 180                | Angelo, writings of .....                                | 237                                                                       |
| plants .....                                                 | 149, 155, 226, 246 | Helderberg .....                                         | 52                                                                        |
| ridge, Colorado .....                                        | 145                | (lower) fossils .....                                    | 56                                                                        |
| Fox Hill beds .....                                          | 27                 | upper .....                                              | 13                                                                        |
| Hills fossils .....                                          | 145                | fossils .....                                            | 232                                                                       |
| group .....                                                  | 96, 145            | Helotes, Texas .....                                     | 146                                                                       |
| Fremont, J. C. ....                                          | 203, 231           | Hersey, J. C. ....                                       | 146                                                                       |
| French .....                                                 | 242                | High Point mine .....                                    | 13                                                                        |
| Fresh and brackish water deposits fossils .....              | 139                | Hilgard, E. W. ....                                      | 124                                                                       |
| water infusoria, Oregon .....                                | 203                | Hilliard, Wyoming .....                                  | 145                                                                       |
| and land mollusca .....                                      | 150                | Hudson River fossils .....                               | 231                                                                       |
| miocene fossils .....                                        | 180                | group .....                                              | 157, 175                                                                  |
| mollusks .....                                               | 125, 156           | Hunter, valley of, Australia .....                       | 223                                                                       |
| paleozoic fossils of Nevada .....                            | 188                | Hyatt, A. ....                                           | 146                                                                       |
| Frontera cretaceous fossils .....                            | 218                | Alpheus, writings of .....                               | 239                                                                       |
| G.                                                           |                    | I.                                                       |                                                                           |
| Galena beds fossils .....                                    | 55                 | Idaho .....                                              | 76, 146                                                                   |
| Garter snake .....                                           | 142                | (Southeastern) .....                                     | 146, 162, 239                                                             |
| Gastropodes cretaceous .....                                 | 181                | Illawara, Australia .....                                | 223                                                                       |
| Gatun, Isthmus of Darien fossils .....                       | 216                | Illinois .....                                           | 24, 26, 38, 37, 38, 40, 41, 50, 53, 54,<br>67, 81, 87, 144, 154, 247, 249 |
| Geinitz, H. B. ....                                          | 51                 | paleontology .....                                       | 90                                                                        |
| Genus pyrgulifera .....                                      | 180                | survey .....                                             | 179                                                                       |
| Geological survey of Iowa, Wisconsin, and<br>Minnesota ..... | 249                | Indiana .....                                            | 25, 69, 144                                                               |
| Geology of North America .....                               | 233, 242           | fossils .....                                            | 147, 154, 177                                                             |
| Georgia .....                                                | 152                | Indianapolis .....                                       | 124                                                                       |
| Glacial rocks of Colorado .....                              | 244                | Infusorial deposits, Oregon .....                        | 229                                                                       |
| Pike's Peak .....                                            | 244                | fossils .....                                            | 103                                                                       |
| Golden City, Colorado .....                                  | 145                | Interior states .....                                    | 164                                                                       |
| Goniatite limestone .....                                    | 25                 | Introductory note .....                                  | 7                                                                         |
| Goode, G. Brown .....                                        | 175                | Iowa. 26, 116, 17 121, 123, 138, 142, 247, 249, 250, 251 |                                                                           |
| Grand Cañon of the Colorado .....                            | 188                | first annual report .....                                | 120                                                                       |
| tertiary history of .....                                    | 174                | and second annual reports .....                          | 122                                                                       |
| River .....                                                  | 246                | geography of .....                                       | 124                                                                       |
| Great Plains .....                                           | 156, 157           | lakes of .....                                           | 122                                                                       |
| Prairie region .....                                         | 166                | (Northwestern) .....                                     | 123                                                                       |
| Red Pipestone quarry .....                                   | 122                | River .....                                              | 248                                                                       |
| Salt Lake .....                                              | 232                | soils of .....                                           | 119                                                                       |
| Greeley, Colorado .....                                      | 88, 145, 146       | (Southern) .....                                         | 120                                                                       |
| Green River .....                                            | 246                | (Southwestern) .....                                     | 120, 123                                                                  |
| group .....                                                  | 145, 171           | geology of .....                                         | 120                                                                       |
| fossils .....                                                | 166                | (Western) .....                                          | 123                                                                       |
| region .....                                                 | 140                | Irish, C. W. ....                                        | 123                                                                       |
| sand marls .....                                             | 265                | Isthmus of Darien, Tertiary fossils .....                | 212, 214                                                                  |
| Greenland .....                                              | 141                | Ives, J. C. ....                                         | 245                                                                       |
| Grinnell .....                                               | 93                 | J.                                                       |                                                                           |
| Grupo da Bahia .....                                         | 181                | Jacou cretaceous fossils .....                           | 218                                                                       |
| Guthrie County, Iowa .....                                   | 123                | Jenney, Walter P. ....                                   | 157, 261                                                                  |
| H.                                                           |                    | John Day group .....                                     | 180                                                                       |
| Hague, Arnold .....                                          | 188                | Jordan River .....                                       | 206                                                                       |
| Haime .....                                                  | 52                 | Judith River .....                                       | 17, 141                                                                   |
| Hall, James .....                                            | 203                | group .....                                              | 96, 139                                                                   |

|                                                 | Page.                                   |                                                   | Page.                       |
|-------------------------------------------------|-----------------------------------------|---------------------------------------------------|-----------------------------|
| Jurassic.....                                   | 33, 47, 70, 76, 108, 125,               | Meek, F. B., writings of.....                     | 13                          |
| 127, 128, 133, 136, 179, 241, 259               |                                         | and Hayden, F. V.....                             | 14, 17, 23, 27              |
| fossils.....                                    | 18, 21, 22, 23, 27, 28, 29, 30, 66, 71, | and Worthen, A. H.....                            | 23, 26, 40, 53              |
| 94, 110, 136, 164, 167, 209, 235, 243, 260, 261 |                                         |                                                   | 63, 81, 90                  |
| ostreids.....                                   | 172                                     | Mesozoic.....                                     | 127, 133, 140, 153          |
| Jura-Trias.....                                 | 144                                     | fossils.....                                      | 176, 239                    |
| fossils.....                                    | 146                                     | unionids.....                                     | 140                         |
| Kanab Valley.....                               | 187                                     | Metamorphoses of <i>Triarthrus becki</i> .....    | 186                         |
| Kansas.....                                     | 19, 71, 151                             | Mexican boundary survey.....                      | 218                         |
| (Eastern).....                                  | 85, 92                                  | Mexico.....                                       | 171, 218                    |
| (Northeastern).....                             | 17, 19                                  | Gulf of.....                                      | 134                         |
| River.....                                      | 19                                      | Mickleborough, John.....                          | 188                         |
| Kennedy Channel.....                            | 36, 52                                  | Miller.....                                       | 125                         |
| Kennicott, Robert.....                          | 62                                      | Miller County, Missouri.....                      | 74                          |
| Kentucky.....                                   | 124, 153                                | Miller, S. A.....                                 | 154, 167, 174, 175          |
| Keokuk group fossils.....                       | 43, 60, 83                              | Mine la Motte, Missouri.....                      | 68                          |
| Kinderhook group fossils.....                   | 41, 59                                  | Minnesota.....                                    | 123, 249, 250, 251          |
| King.....                                       | 64                                      | Miocene.....                                      | 49, 171, 214                |
| Clarence.....                                   | 65, 233, 239                            | fossils.....                                      | 170, 210, 211, 213          |
| Kjækenmøddinga.....                             | 124, 125                                | † fossils.....                                    | 212                         |
|                                                 |                                         | ostreids.....                                     | 237                         |
|                                                 | L.                                      | Mississippi.....                                  | 96                          |
| Laguna, New Mexico.....                         | 241                                     | River.....                                        | 66, 156, 241, 242           |
| Lake Superior.....                              | 232                                     | Upper, fossils of.....                            | 273                         |
| Laramie fossils.....                            | 140, 145, 166, 168                      | Valley.....                                       | 116, 118                    |
| group.....                                      | 136, 141, 145, 156, 171                 | Missouri.....                                     | 13, 68, 74                  |
| fossils.....                                    | 159, 160                                | River.....                                        | 14, 15, 28, 71, 96          |
| ostreids.....                                   | 173                                     | great falls of.....                               | 176                         |
| sea.....                                        | 156                                     | Upper.....                                        | 31, 95, 175, 259            |
| Laredo.....                                     | 218                                     | Montagnes Rocheuses.....                          | 241                         |
| Leon Springs Cretaceous fossils.....            | 218                                     | Moniteau County, Missouri.....                    | 13                          |
| Lignite.....                                    | 171                                     | Montana.....                                      | 139, 176, 244, 259          |
| beds fossils.....                               | 105                                     | (Northeastern).....                               | 171                         |
| Lignite.....                                    | 141                                     | Montreal.....                                     | 179                         |
| Little Thompson Creek.....                      | 145                                     | Morgan County, Missouri.....                      | 74, 75                      |
| Loess.....                                      | 75                                      | Morrison, Colorado.....                           | 145, 146                    |
| Loriot, P. de.....                              | 174, 181                                | Morse, E. S.....                                  | 134                         |
| Los Angeles.....                                | 241, 242, 244                           | Mountain limestone fossils.....                   | 243                         |
| Louisiana.....                                  | 255                                     | Mudge, B. F.....                                  | 146                         |
| Ludlow, William.....                            | 259                                     | Mullan, John.....                                 | 28                          |
|                                                 | M.                                      |                                                   | N.                          |
| Mackenzie River.....                            | 62                                      | Napoleon.....                                     | 241, 242                    |
| Macomb, J. N.....                               | 93, 246                                 | Natatory appendages of trilobites.....            | 185                         |
| Magnesian limestone, first.....                 | 75                                      | National Museum.....                              | 175                         |
| second.....                                     | 13, 75                                  | Park.....                                         | 259                         |
| third.....                                      | 75                                      | Nebraska.....                                     | 13, 14, 15, 16, 17, 18, 19, |
| fourth.....                                     | 75                                      | 20, 21, 22, 23, 27, 35, 36, 51, 94, 122, 251, 255 |                             |
| (lower) fossils.....                            | 248                                     | City.....                                         | 71                          |
| Mammoth Cave.....                               | 124                                     | (Eastern).....                                    | 71                          |
| Marcou, J. B.....                               | 171                                     | Nevada.....                                       | 53, 123, 188, 244           |
| Marcou, Jules.....                              | 17, 35, 233, 242                        | paleozoic, section of.....                        | 189                         |
| writings of.....                                | 241                                     | (Trias).....                                      | 110                         |
| Marcy, R. B.....                                | 255                                     | Newberry, J. S., writings of.....                 | 245                         |
| Marine Eocene fossils.....                      | 180                                     | New genus of Euripterids.....                     | 187                         |
| Marl beds (Lower).....                          | 265, 266                                | Jersey.....                                       | 14, 17, 27, 96, 265, 271    |
| (Middle).....                                   | 265                                     | Mexican cretaceous.....                           | 96                          |
| fossils.....                                    | 270                                     | Mexico.....                                       | 17, 123,                    |
| of New Jersey, fossils of.....                  | 265                                     | 151, 152, 241, 242, 244, 256, 257, 273, 274       |                             |
| Marls (Upper).....                              | 265                                     | South Wales fossils.....                          | 224                         |
| Marl beds (Upper) fossils.....                  | 270                                     | York.....                                         | 116, 232                    |
| Marnoch, G. W.....                              | 146                                     | Newton, Henry.....                                | 157, 261                    |
| Matthew.....                                    | 198                                     | Niagara fossils.....                              | 80                          |
| Mauvaises Terres.....                           | 14                                      | group.....                                        | 154                         |
| McClellan, G. B.....                            | 255                                     | fossils.....                                      | 50, 231                     |
| Meek, F. B.....                                 | 125, 128                                |                                                   |                             |

|                                              | Page.                           |                                         | Page.                   |
|----------------------------------------------|---------------------------------|-----------------------------------------|-------------------------|
| Nicolllet, I. N., writings of .....          | 273                             | Permian .....                           | 19, 32, 187             |
| Niobrara group .....                         | 96                              | fossils .....                           | 256, 257, 274           |
| Nishnabotany .....                           | 129                             | Permo-carboniferous fossils .....       | 235                     |
| Non-marine fossil mollusca, supplement to .. | 180                             | Petermann, A .....                      | 242                     |
| mollusca .....                               | 167                             | Pike's Peak .....                       | 244                     |
| North American continent biologically con-   |                                 | Plastic clays fossils .....             | 266                     |
| sidered .....                                | 177                             | Plateau Province .....                  | 136                     |
| Northwest .....                              | 17                              | Platte River .....                      | 71                      |
| Northwestern Boundary Commission .....       | 27                              | Plattsmouth .....                       | 71                      |
| localities .....                             | 92                              | Pliocene .....                          | 244                     |
| Nouveau Mexique .....                        | 241                             | fossils .....                           | 170                     |
| Nuevo Leon .....                             | 171                             | ostreids .....                          | 238                     |
| O.                                           |                                 |                                         |                         |
| Oak Creek, Texas, Cretaceous fossils .....   | 218                             | Poblacion .....                         | 273                     |
| Océan, Pacifique .....                       | 241                             | Pogonip group fossils .....             | 190                     |
| Ocoya Creek (Miocene fossils) .....          | 212, 214                        | Point of Rocks, Wyoming .....           | 145                     |
| Ohio .....                                   | 66, 67, 68, 69, 70, 77, 88, 153 | Polar Ocean .....                       | 52                      |
| valley .....                                 | 248                             | Pope, John .....                        | 241, 242, 256, 257, 274 |
| Oligocene fossils .....                      | 230                             | Portuguese .....                        | 181                     |
| Ostreids .....                               | 237                             | Post Pliocene .....                     | 205                     |
| Omaha .....                                  | 71                              | ostreids .....                          | 238                     |
| Onondaga limestone .....                     | 13                              | Potomac River, section near mouth ..... | 205                     |
| Oregon .....                                 | 17, 203, 229, 231, 256          | Potsdam .....                           | 18, 31, 259             |
| (Eastern) .....                              | 180                             | fossils .....                           | 231, 233                |
| (Western) .....                              | 180                             | Powell, J. W. .....                     | 126, 157                |
| Organic remains in Oregon .....              | 231                             | Prairie fires .....                     | 124                     |
| Oriakany group fossils .....                 | 57                              | Pre-carboniferous of Grand Cañon .....  | 188                     |
| Ostreids, fossil N. A. .....                 | 172                             | Preservation of fossils .....           | 146                     |
| Otse City .....                              | 71                              | Preston .....                           | 241, 242                |
| Owen, D. D., and Shumard, B. F. ....         | 249, 251                        | Primordial .....                        | 31, 126, 128            |
| writings of .....                            | 247                             | fossils .....                           | 27, 259, 261            |
| Owl, great horned .....                      | 144                             | Progress of Invertebrate Paleontology   |                         |
| Oyster, enemies of .....                     | 176                             | U. S. ....                              | 150, 152, 156, 171      |
| P.                                           |                                 |                                         |                         |
| Pacific Ocean .....                          | 28                              | Prospect Mountain group fossils .....   | 189                     |
| Railroad .....                               | 65                              | Prout .....                             | 64                      |
| R. R. R. Exploration .....                   | 233                             | Hiram A., writings of .....             | 274                     |
| Pacoña or Pacorina Cañon .....               | 244                             | Pueblo, Mexico .....                    | 153                     |
| Paleontologic notes .....                    | 199                             | Pyramid Mount .....                     | 17                      |
| Paleontology of Black Hills .....            | 261                             | Q.                                      |                         |
| Colorado River of the West .....             | 245                             | Quaternary .....                        | 18, 74, 75              |
| Exploration of Iowa, Wis-                    |                                 | R.                                      |                         |
| consin, and Illinois .....                   | 247                             | Raritan clays .....                     | 265                     |
| Fortieth Parallel Survey .....               | 233                             | Raton .....                             | 273                     |
| P. R. R. Surv., vol. vii .....               | 217                             | Raynolds, W. F. ....                    | 27                      |
| United States and Mexican                    |                                 | Recent fossils .....                    | 211, 213                |
| Boundary Survey .....                        | 233                             | Red quartzite .....                     | 123                     |
| Paleozoic .....                              | 37, 41, 64, 68                  | River .....                             | 241, 242, 255           |
| crinoides .....                              | 53, 63, 64                      | Report Geology of Iowa, Wisconsin and   |                         |
| fossils .....                                | 26, 138                         | Minnesota .....                         | 250                     |
| groups .....                                 | 187                             | Survey, Iowa .....                      | 123                     |
| pteropoda .....                              | 199                             | Paleontologic field work, 1877 .....    | 144                     |
| rocks .....                                  | 249                             | Reptilian age .....                     | 33                      |
| of Texas .....                               | 186                             | Rio Grande del Norte .....              | 241, 242                |
| (Upper) fossils .....                        | 51                              | Puerco cretaceous fossils .....         | 218                     |
| Palestine expedition .....                   | 206                             | San Pedro cretaceous fossils .....      | 218                     |
| Park range .....                             | 142                             | Riverside .....                         | 71                      |
| Part I. ....                                 | 9                               | Rock Bluff .....                        | 71                      |
| II .....                                     | 113                             | Rockford .....                          | 25                      |
| III .....                                    | 183                             | Rock Springs, Wyoming .....             | 1 5                     |
| IV .....                                     | 201                             | Rocky Mountains .....                   | 88, 142, 145, 157, 242  |
| Parvin, T. S. ....                           | 123                             | Rouge (rivière) .....                   | 241                     |
| Patuxent River section .....                 | 205                             | Rulo .....                              | 71                      |
|                                              |                                 | Ryder, John A. ....                     | 172                     |

| S.                                                           | Page.               | Page.                                                                                                  |
|--------------------------------------------------------------|---------------------|--------------------------------------------------------------------------------------------------------|
| Saccharoidal sandstone.....                                  | 13, 74, 75          | Tertiary ..... 15, 16, 17, 76, 92, 108, 128, 135, 136, 137, 139, 171, 285                              |
| Sage Creek, Colorado .....                                   | 145                 | classification of..... 205                                                                             |
| Salado, Texas .....                                          | 146                 | fossils .. 21, 22, 23, 27, 28, 65, 66, 70, 71, 77, 93, 95, 112, 138, 159, 214, 215, 216, 218, 219, 243 |
| Saline Co., Missouri.....                                    | 74, 75              | Oregon..... 256                                                                                        |
| Saint John formation.....                                    | 198                 | Washington Territory..... 256                                                                          |
| St. John, O. H. ....                                         | 123                 | (Lower) ..... 205                                                                                      |
| Saint Joseph .....                                           | 71                  | (Medial)..... 206                                                                                      |
| St. Louis group fossils.....                                 | 48, 84              | fossils .. 215                                                                                         |
| Saint Mary's river section.....                              | 205                 | of California..... 244                                                                                 |
| St. Peter's limestone (lower).....                           | 248                 | Ostreids .. 237                                                                                        |
| Saint Vrain's river, Colorado.....                           | 145                 | shells..... 212                                                                                        |
| San Fernando Mission .....                                   | 244                 | upper..... 205                                                                                         |
| Sierra .....                                                 | 244                 | Texas..... 67, 68, 151, 218, 242, 256, 257, 274                                                        |
| Francisco Mountains.....                                     | 241                 | cretaceous..... 176                                                                                    |
| Francisquito ranch.....                                      | 244                 | fossils .. 214                                                                                         |
| Juan .....                                                   | 93                  | Paleozoic..... 188                                                                                     |
| Expedition.....                                              | 246                 | Tertiary fossils..... 215                                                                              |
| Lorenzo Peru) fossils.....                                   | 227                 | Tierra del Fuego fossils..... 227                                                                      |
| Pedro Geological section.....                                | 241                 | Toads..... 141                                                                                         |
| Santa Fe .....                                               | 246                 | Triassic..... 88, 108                                                                                  |
| Saskatchewan Valley.....                                     | 171                 | fossils .. 110, 144, 162, 167, 235, 239, 246                                                           |
| Schiel, Dr. ....                                             | 203                 | Trenton Falls, N. Y. .... 185                                                                          |
| James, writings of.....                                      | 253                 | fossils .. 187, 231                                                                                    |
| Schlumberger.....                                            | 174                 | group fossils..... 54                                                                                  |
| Shell heaps .....                                            | 125                 | limestone .. 75, 185                                                                                   |
| structure.....                                               | 122                 | fossils .. 185, 186                                                                                    |
| Shumard .....                                                | 256                 | Trilobites..... 185                                                                                    |
| B. F. ....                                                   | 157                 | period..... 126, 129                                                                                   |
| and Owen, D. D. ....                                         | 258                 | Trilobite..... 185                                                                                     |
| writings of.....                                             | 255                 | appendages of..... 188                                                                                 |
| G. G. ....                                                   | 274                 | eggs of..... 186                                                                                       |
| Sierra Liebre.....                                           | 244                 | eye of..... 187                                                                                        |
| Mudre.....                                                   | 244                 | legs of..... 185                                                                                       |
| Nevada.....                                                  | 242                 | molting of shell..... 187                                                                              |
| of Santa Monica.....                                         | 244                 | new genus of Cambrian .. 199                                                                           |
| Silliman, B. ....                                            | 242                 | organization of..... 187                                                                               |
| Silurian..... 31, 38, 41, 53, 54, 64, 70, 76, 77, 128, 174   |                     | Truckee group fossils..... 168                                                                         |
| fossils .....                                                | 66, 70, 71, 76, 108 | Tucumcari..... 241                                                                                     |
| (Lower)..... 13, 18, 68, 74, 128, 129, 153, 155              |                     | Tuerto..... 273                                                                                        |
| fossils..... 27, 65, 91, 148, 189, 190                       |                     | Turkey River fossils..... 248                                                                          |
| system..... 75                                               |                     |                                                                                                        |
| (Upper)..... 156, 123, 154, 155                              |                     | U.                                                                                                     |
| fossils .....                                                | 91, 144, 148        | Uinta Mountains..... 142, 145                                                                          |
| Simpson, J. H. ....                                          | 94                  | Ulrich, E. O. .... 174                                                                                 |
| Sparrows, English .....                                      | 152                 | United States..... 147, 188, 242                                                                       |
| Spergen Hill .....                                           | 76                  | Expl. Exp. fossils..... 224                                                                            |
| Spontaneous fission.....                                     | 125                 | National Museum..... 181                                                                               |
| Stansbury Howard.....                                        | 232                 | Utah..... 22, 71, 94, 128, 139, 145, 146, 153, 159, 232, 244                                           |
| Subcarboniferous..... 126, 130, 149, 153, 154, 156           |                     | Southern..... 152                                                                                      |
| fossils..... 121, 249, 251                                   |                     | Utica slate..... 187                                                                                   |
| Sucia Island..... 27, 92                                     |                     | fossils..... 186                                                                                       |
| Sulphur Creek.....                                           | 76                  | V.                                                                                                     |
| Summary of distribution of fossils in the Northwest..... 251 |                     | Vancouver's Island..... 17, 92, 256                                                                    |
| Sunflowers.....                                              | 166                 | W.                                                                                                     |
| Supplement.....                                              | 273                 | Walcott, C. D., writings of..... 186                                                                   |
| Süsswasser formen, Oregon.....                               | 229                 | Walker, D. H. .... 146                                                                                 |
| Swallow, G. C. ....                                          | 13                  | Warren, G. K. .... 17, 18, 23                                                                          |
| Syria fossils .....                                          | 206                 | Wasatch group..... 145                                                                                 |
| T.                                                           |                     | Washington Biological Society..... 177                                                                 |
| Tanganyika shells.....                                       | 156                 | Territory..... 256                                                                                     |
| Terra del Fuego.....                                         | 224                 |                                                                                                        |



|                                                           | Page.              |                                                                | Page.                        |
|-----------------------------------------------------------|--------------------|----------------------------------------------------------------|------------------------------|
| Waverly group fossils .....                               | 88, 235            | Whitfield, R. P., writings of .....                            | 259                          |
| Western States 33, 40, 41, 63, 64, 67, 157, 163, 243, 274 |                    | Whitney, J. D. ....                                            | 29, 53                       |
| West Indies .....                                         | 141, 147           | Wilkes, Charles .....                                          | 205, 223, 224                |
| Virginia .....                                            | 69                 | Williamson, R. S. ....                                         | 210                          |
| Wetherby, A. G. ....                                      | 153                | Winchell .....                                                 | 17                           |
| Wheeler, G. M. ....                                       | 125, 128, 151, 244 | Wind River group .....                                         | 96                           |
| Whipple, A. W. ....                                       | 241, 242           | Tertiary fossils .....                                         | 96, 107                      |
| White, C. A. ....                                         | 237, 239           | Wisconsin .....                                                | 174, 247, 248, 249, 250, 251 |
| Biography of. ....                                        | 115                | Woodpeckers .....                                              | 125                          |
| and Nicholson, H. A. ....                                 | 141, 147           | Wooster, L. C. ....                                            | 146                          |
| and St. John, O. H. ....                                  | 120, 121           | Worthen, A. H. ....                                            | 90, 179                      |
| writings of. ....                                         | 116                | Wyoming. . . . . 68, 71, 76, 189, 145, 146, 150, 153, 158, 244 |                              |
| Mountain Indian reservation. ....                         | 188                | (Southwestern) .....                                           | 156                          |
| River, Colorado .....                                     | 145                |                                                                |                              |
| group .....                                               | 96                 | Y. ....                                                        |                              |
| Indian agency, Colorado ....                              | 145                | Yampa River, Colorado .....                                    | 145                          |
| Tertiary fossils. ....                                    | 96, 107            | Yellowstone River .....                                        | 171                          |
| Whiteaves, J. F. ....                                     | 179                |                                                                |                              |
| Whitfield, R. P., and Hall, James .....                   | 272                | Z. ....                                                        |                              |
| and White, C. A. ....                                     | 272                | Zoophytes .....                                                | 223                          |













JUL 6 - 1956

